EA-87-02

Ontario

ENVIRONMENTAL ASSESSMENT BOARD

VOLUME: 120

DATE: Tuesday, August 8th, 1989

BEFORE: M.I. JEFFERY, Q.C., Chairman
E. MARTEL, Member
A. KOVEN, Member

FOR HEARING UPDATES CALL (TOLL-FREE): 1-800-387-8810

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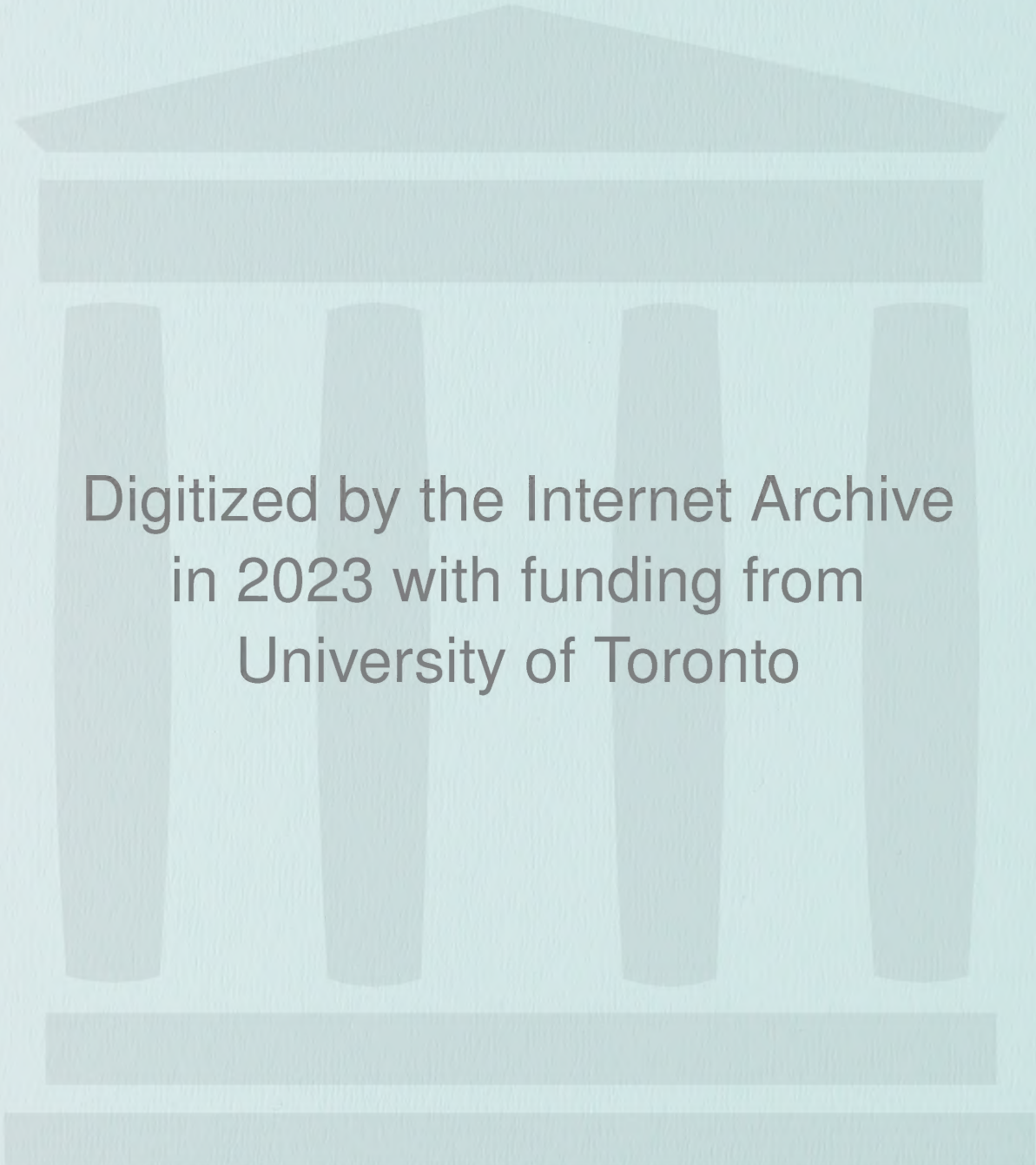

EA-87-02

HEARING ON THE PROPOSAL BY THE MINISTRY OF NATURAL RESOURCES FOR A CLASS ENVIRONMENTAL ASSESSMENT FOR TIMBER MANAGEMENT ON CROWN LANDS IN ONTARIO

IN THE MATTER of the Environmental Assessment Act, R.S.O. 1980, c.140;

- and -

IN THE MATTER of the Class Environmental Assessment for Timber Management on Crown Lands in Ontario;

- and -

IN THE MATTER OF a Notice by the Honourable Jim Bradley, Minister of the Environment, requiring the Environmental Assessment Board to hold a hearing with respect to a Class Environmental Assessment (No. NR-AA-30) of an undertaking by the Ministry of Natural Resources for the activity of timber management on Crown Lands in Ontario.

Hearing held at the Ramada Prince Arthur Hotel, 17 North Cumberland St., Thunder Bay, Ontario, on Tuesday, August 8th, 1989, commencing at 1:00 p.m.

VOLUME 120

BEFORE:

MR. MICHAEL I. JEFFERY, Q.C.	Chairman
MR. ELIE MARTEL	Member
MRS. ANNE KOVEN	Member

A P P E A R A N C E S

MR. V. FREIDIN, Q.C.) MS. C. BLASTORAH) MS. K. MURPHY) MS. Y. HERSCHER)	MINISTRY OF NATURAL RESOURCES
MR. B. CAMPBELL) MS. J. SEABORN)	MINISTRY OF ENVIRONMENT
MR. R. TUER, Q.C.) MR. R. COSMAN) MS. E. CRONK) MR. P.R. CASSIDY)	ONTARIO FOREST INDUSTRY ASSOCIATION and ONTARIO LUMBER MANUFACTURERS' ASSOCIATION
MR. H. TURKSTRA	ENVIRONMENTAL ASSESSMENT BOARD
MR. J. WILLIAMS, Q.C. MR. B.R. ARMSTRONG MR. G.L. FIRMAN	ONTARIO FEDERATION OF ANGLERS & HUNTERS
MR. D. HUNTER	NISHNAWBE-ASKI NATION and WINDIGO TRIBAL COUNCIL
MR. J.F. CASTRILLI) MS. M. SWENARCHUK) MR. R. LINDGREN)	FORESTS FOR TOMORROW
MR. P. SANFORD) MS. L. NICHOLLS) MR. D. WOOD)	KIMBERLY-CLARK OF CANADA LIMITED and SPRUCE FALLS POWER & PAPER COMPANY
MR. D. MacDONALD	ONTARIO FEDERATION OF LABOUR
MR. R. COTTON	BOISE CASCADE OF CANADA LTD.
MR. Y. GERVAIS) MR. R. BARNES)	ONTARIO TRAPPERS ASSOCIATION
MR. R. EDWARDS) MR. B. McKERCHER)	NORTHERN ONTARIO TOURIST OUTFITTERS ASSOCIATION

APPEARANCES: (Cont'd)

MR. J.W. ERICKSON, Q.C.) MR. B. BABCOCK)	RED LAKE-EAR FALLS JOINT MUNICIPAL COMMITTEE
MR. D. SCOTT) MR. J.S. TAYLOR)	NORTHWESTERN ONTARIO ASSOCIATED CHAMBERS OF COMMERCE
MR. J.W. HARBELL) MR. S.M. MAKUCH)	GREAT LAKES FOREST
MR. J. EBBS	ONTARIO PROFESSIONAL FORESTERS ASSOCIATION
MR. D. KING	VENTURE TOURISM ASSOCIATION OF ONTARIO
MR. D. COLBORNE	GRAND COUNCIL TREATY #3
MR. R. REILLY	ONTARIO METIS & ABORIGINAL ASSOCIATION
MR. H. GRAHAM	CANADIAN INSTITUTE OF FORESTRY (CENTRAL ONTARIO SECTION)
MR. G.J. KINLIN	DEPARTMENT OF JUSTICE
MR. S.J. STEPINAC	MINISTRY OF NORTHERN DEVELOPMENT & MINES
MR. M. COATES	ONTARIO FORESTRY ASSOCIATION
MR. P. ODORIZZI	BEARDMORE-LAKE NIPIGON WATCHDOG SOCIETY
MR. R.L. AXFORD	CANADIAN ASSOCIATION OF SINGLE INDUSTRY TOWNS
MR. M.O. EDWARDS	FORT FRANCES CHAMBER OF COMMERCE
MR. P.D. McCUTCHEON	GEORGE NIXON

APPEARANCES: (Cont'd)

MR. C. BRUNETTA	NORTHWESTERN ONTARIO TOURISM ASSOCIATION

I N D E X O F P R O C E E D I N G S

I N D E X O F E X H I B I T S

---Upon commencing at 1:10 p.m.

THE CHAIRMAN: Good afternoon. Welcome back. Please be seated.

Ladies and gentlemen, I think we will start off the proceedings this afternoon with some of the outstanding procedural matters that we left before the summer break.

First and foremost will be the discussion of the manner in which and the terms under which the Board will call Dean Baskerville and, in this regard, as you are aware, the Board has retained legal counsel, Mr. Herman Turkstra, to represent the Board in connection with the calling of this witness and also presumably to represent this witness when that witness is called.

Now, I understand that there have been meetings with Mr. Turkstra subsequent to the last sitting and at those meetings there have been, I presume, certain matters clarified.

The way the Board intends to proceed today is to call upon Mr. Turkstra to raise this matter formally before us and to indicate what matters the Board should be dealing with at this time.

Mr. Turkstra?

MR. TURKSTRA: Well, Mr. Chairman, notice

was given to the participants and groups who were parties and an informal meeting was held at the Board's offices. At that time the process that developed, I think can be said by consensus, was that my associate Marcia Valiante and I would review the transcripts and the exhibits and attempt from that review to develop a list of subjects and a list of exhibits which we felt directly came within the scope of the Board's order, and that once we had assembled that list we would send the list, the transcript references with the assistance of Mr. Mander, to all of the parties and request that they comment on it.

As of today I really only have one comment on the exhibits and that is from counsel for Forests for Tomorrow. But I think sufficient time has gone by for me to be able to say that the list of exhibits and subject matters that I proposed have not produced any significant concerns expressed on the parts of other counsel.

I expect, having said that, if there were an agreement it will be prompted this week and/or in the near future and under normal circumstances my next step would be to meet with Dean Baskerville. And we had originally expected that we might be able to do that toward the end of the summer and to turn over to

him the transcript references that we have accumulated. They have been bound to give you some idea of the scope. Mr. Chairman, that's -- does the Board have a copy of it?

The transcripts have been bound and unless I am instructed otherwise by the Board, my scheduling would be that when the Ministry case is finished it would be my understanding that Dr. Baskerville will be called immediately at the conclusion of the MNR case.

I would like the Board perhaps to give some guidance as to where it might wish to hear the evidence of Dr. Baskerville. What I noted in the last meeting is that virtually all counsel come from the Toronto area and I was going to propose that you might at least give some consideration to having his evidence heard in Toronto from the point of view of convenience of the parties. And not knowing how long his evidence will take, it's certainly one stop for him to come there.

THE CHAIRMAN: That's one of the considerations, Mr. Turkstra.

Has any thought by yourself or other counsel been given to how long Dean Baskerville's examination might in fact take?

MR. TURKSTRA: No, sir. As I say, the only thing that we have been able to do is end up with about six pages of topics, and if I were to take a rough guess I would say somewhere in direct between a week or two.

THE CHAIRMAN: That's for direct evidence?

MR. TURKSTRA: Yes. I wouldn't speculate on cross-examination.

THE CHAIRMAN: Has any indication been given, Mr. Turkstra, by Dean Baskerville as to how long he might be available?

MR. TURKSTRA: No, but he indicated that he understood that it may be a several-week operation and we have to work that I think perhaps around his academic responsibilities.

I think until I get a better handle on how the Ministry's case might be proceeding and approximately when he might be called, it is difficult for me to...

THE CHAIRMAN: Well, given the fact that the Ministry's case might be finished - if we can be so bold as to even speculate that it might ever be finished - in October of this year, would that in any way, and I assume that the university is in session

then, has any consideration been given, if that did in fact occur, would he be available?

MR. TURKSTRA: That was the date that I was originally working on and that seemed to be workable for him. We haven't got down to the specific weeks and times, but with that indication I will go back to him and let you know if there is a problem.

There are two outstanding matters that I would like to deal with, if I could today, in connection with this.

The first is that the letter from counsel for Forests for Tomorrow raises the fact that in the list of exhibits that I propose to have Dr. Baskerville review have gone beyond the audit itself and the study on that and had, in fact, proposed seven exhibits: 4, 16, 58, 135, 378, 405 and 425 and what Michelle Swenarchuk properly commented on is that several of those are not an integral part of the audit, but it was our view that those exhibits were introduced as a part of the discussion on the audit and contain material directly relating to it, and unless the Board rules otherwise I will be inclined to ask Dr. Baskerville to be ready to answer questions about that.

The second issue is the scope of the cross-examination and the Board's order in its notice

to parties of March 9th in the second paragraph said that:

> "Dean Baskerville's evidence will be confined to a discussion of his audit report and the discussion of that part of the Ministry of Natural Resources October action plan which pertains to his audit report and nothing further."

I take that to be a direction to myself as to the evidence to be given in-chief and I have some concern about the Board limiting the scope of cross-examination to matters that are directly set out within that term.

I have no problem with conducting my own examination of that, but I do have some difficulty in saying that. If the word "evidence" in that clause means evidence-in-chief then I have no problem with that, but if it means cross-examination or total evidence, then there may very well be difficulty in terms of the way in which the judges are describing the right of cross-examination.

And in that connection, perhaps before we all go home today, I thought it might be helpful if there is a clear understanding of what the rights of cross-examination are going to be of the parties and

also a very clear indication as to where the parties stand on whether or not any of the parties will be calling Dr. Baskerville.

In that connection, it is my submission to you that the only reason for the Board to call Dr. Baskerville is that it appeared that no party was going to call him and that his evidence would be of assistance to the Board taking into account the nature of the Board's function. And it is my submission to you that if any of the parties intend to call Dr. Baskerville it would not be appropriate for me to proceed with what I am doing, but I should stop that.

And I think it flows from that that if the Board's March order is to remain, then it virtually requires a commitment from other parties not to call him. And if they intend to call him, then I would like to make some submissions as to whether or not that order might very well be rescinded because I see some difficulties with that.

In terms of the scope of cross-examination, it would be my submission to you that when a cross-examining party goes beyond the direct evidence which the Board is calling Dr. Baskerville for, they are in substance dealing with a person who becomes notionally, in my submission, their

witness and at that point their examination of him on other subject matters should be by way of examination-in-chief; that is to say, not the kind of cross-examination that you might get if he was another party.

And it also goes without saying that since, as Mr. Freidin says, there is no property in a witness, the fact that I am preparing Dr. Baskerville for his appearances here as a witness for the Board in no way prevents any person from talking to Dr. Baskerville or asking him about his evidence or his views. The fact is he is not under my control as Board counsel and I can't restrain him from talking to other people. So that if the cross-examination -- the bottom line in my submissions are this: If the cross-examination is intended to go beyond the scope of the evidence that seems to be generally agreed as being within the scope of the Board's order, then when the cross-examiner ventures into that field they enter into areas where they should be treated as if they were examining their own witness in-chief at that stage.

And that would be subject to the Board's rulings on relevance and weight of the evidence, but I think those rules ought to be clearly understood before we get too far down the path.

I think, Mr. Chairman, those are the submissions that I wanted to make to get the submissions going.

THE CHAIRMAN: All right. Let's proceed in this way: The Board, as I think all the parties are aware, decided that it would call Dean Baskerville because it appeared to the Board after several months of inquiry amongst the various parties if anyone else wished to call him that he would not in fact be called by any other pary.

The Board felt that it would benefit the hearing and the Board's deliberations to have clarification from Dean Baskerville himself as to what he meant in terms of the language used in the audit document, and it was for that reason that the Board indicated that it would consider calling this witness as the Board's witness.

Now, if it turns out that another party is intending to call Dean Baskerville - and the Board appreciates that it has no property rights in a witness - if another party wishes to call Dean Baskerville they are at liberty to do so provided, of course, that his evidence is relevant to the subject matter of this hearing.

If another party wishes to call Dean

Baskerville, the Board wants to know that and wants the undertaking from that party to in fact call this witness because, if that is the case, then the Board may well decide that it will not call Dean Baskerville as its witness.

The purpose in having Dean Baskerville before the Board is to clarify certain aspects which have arisen in evidence already and have, in the Board's view, been the subject of some speculation as to what he did or did not mean in terms of his audit report.

Now, I understand from correspondence that has been submitted to you, Mr. Turkstra, that one of the parties, the Federation of Anglers & Hunters, had indicated that they might in fact wish to call Dean Baskerville. And again, if that is the case, then perhaps Mr. Hanna and Dr. Quinney, you can indicate to us at this time that that is your intention or is not your intention because that will definitely affect the way the Board wishes to proceed in this matter.

MR. HANNA: Mr. Chairman, I would like to give you a yes or no answer; unfortunately, it is not a yes or no circumstance. I believe we are all groping with much the same problem, we are trying to determine the scope and nature of the evidence that Dr.

Baskerville will put forward.

The Board's ruling is quite clear in terms of what the evidence is that it's looking for from Dr. Baskerville, however -- and I believe Ms. Murphy actually drew this to the Board's attention when she was speaking with respect to the action plan in that the action plan only goes to the essence of many parts of the application and, therefore, the scope of the evidence that he is going to bring forward is still somewhat uncertain in terms of how far he actually will go in the evidence that he gives through the Board as directed by Mr. Turkstra.

As Mr. Turkstra has indicated, he has done an initial survey of the transcripts and there is a voluminous amount of information brought forward whereby Dr. Baskerville's name has been used or implicated and I would suggest to you that the Federation is still in the process of looking through the transcripts for possibly other places whereby he may be implicated further in terms of the evidence that he might want to -- the Board might want to have clarification on.

The Ontario Federation of Anglers & Hunters' position is that Dr. Baskerville, if not the expert, is one of the experts in the country in terms

of forest management. He has -- the people of Ontario have already invested a substantial amount of money in his knowledge of the system, even if it was the system prior to the 1986 forest planning manual.

There is, in our view, nobody in Canada that has the same amount of knowledge and experience, and given that investment and the investment the Board will be making in bringing him forward, we would be quite concerned if the scope of his evidence was confined such that the people of Ontario are not given the full benefit of the knowledge that he offers.

And I guess the position of the Federation is when the circumstance arises in cross-examination that the scope of cross-examination was limited in such a way that the full benefit of his knowledge was not provided, that the Federation would at that time contemplate retaining Dr. Baskerville.

Now, I believe Mr. Turkstra has raised, in my view, a very interesting issue and that is this question of what Dr. Baskerville's status would be once cross-examination had exceeded the scope of the direct evidence that he would be preparing him for.

I would say to you at this time that if the Board was of the view, as I believe has been indicated by Mr. Turkstra, that if during

cross-examination once he is asked questions outside of what material Mr. Turkstra had prepared him for, that that would be treated basically as evidence-in-chief and likewise that there would be the opportunity to give Dr. Baskerville some pre-notice of those questions coming so that he can prepare himself, then I see no reason why the Ontario Federation of Anglers & Hunters would contemplate calling Dr. Baskerville.

In fact, as I believe I submitted to the Board earlier in this matter, in my view I think there is a certain benefit in having him in that somewhat impartial role. I believe in fact Ms. Murphy also made reference to fairness in having Dean Baskerville called by the Board.

So I guess basically my position is at the present time, if the Board does concur with the view that Mr. Turkstra has brought forward, I cannot see the need for the Federation to call Dr. Baskerville.

By the same token, if the Federation does become restricted in any way in its cross-examination of Dr. Baskerville, we will at that time endeavour possibly to call him as a witness.

THE CHAIRMAN: Any other parties have any comments on these issues?

MR. CASSIDY: Go ahead, Mr. Castrilli.

MR. CASTRILLI: Mr. Chairman, there was a matter raised by Mr. Turkstra that I want to briefly direct your attention to.

He referred to a letter that was sent to him in July with respect to the fact that four other exhibits authored by Dr. Baskerville are in fact in evidence, and we would also note that a number of those exhibits deal with matters that are in fact also dealt with in the audit.

Having said that, we are somewhat concerned about Mr. Turkstra's suggestion that any examination beyond what is essentially Exhibit 16 or what is to be found in the Board order of March 9th becomes not cross-examination but examination-in-chief. I would submit in the circumstances it would be highly unlikely if not unreasonable to ask the same party to both cross-examine and examine the same witness with respect to the same matters.

I would simply ask that the Board's order be expanded to include Exhibits 135, 378, 405 and 425 as a matter to be dealt with by Mr. Turkstra in-chief.

Those are my submissions.

MR. CASSIDY: Mr. Chairman, perhaps I can take an opportunity now to address the Board in this

matter. In this matter we were operating on the similar assumption to yourself, Mr. Chairman, and that is that the Board was going to call Dean Baskerville and that was going to be done at the end of MNR's case. For reasons which I will indicate, we support proceeding in that fashion.

However, we became aware of the possibility that the Anglers & Hunters were comtemplating, and it appears now in some fashion they are still contemplating calling him as their own witness. The matter should be addressed by the Board and it was brought to everyone's attention again by Ms. Cronk.

It appears to us, however, our position should - and for reasons of fairness which I will refer to - should remain the same and that is that Dean Baskerville should be called by the Board at the conclusion of MNR's case, and perhaps I can state that another way, prior to the commencement of any other party's case.

It appears to us for reasons which have readily appeared upon a review of the materials that Mr. Turkstra and his associate have prepared that Dean Baskerville has had a major impact on this issue, he has had a lot of things to say, and it was actually

interesting to see the extent to which he has been referred to in this evidence to date and, therefore, he is in a unique position for all the reasons which I am sure you are aware, and to comment on some of the comments that have been made in this hearing on his views as expressed in the audit report and others.

However, the reason why we feel he should be called to give those comments by the Board and at the end of MNR's case is simply for two major reasons, because it is the fairest procedure.

The first is of course it would afford all of the parties, not just our client, but everyone within this room the opportunity to cross-examine him on those views since his views were so widespread and touched upon many of the issues that appear to have surfaced in this hearing. It would afford the parties, even within the confines of the material that Mr. Turkstra has put together, the opportunity to have a fairly wide range of discussion with him on those matters. So, therefore, you would have every party in the position of being equal; that is, they have equal rights to cross-examination of him and obviously MNR would have the opportunity to have their due reply.

And, secondly, it would also be fair to all parties because every party would then be in a

position and would all be able to do that, of calling evidence in their own cases to deal with Dean Baskerville's evidence, if you will. If there is something that they disagreed with with Dean Baskerville or something that they agreed with and wanted to support, every party would have that opportunity.

If this were to be done at any other time were it called during, for example, the Anglers & Hunters' evidence, the parties proceeding the Anglers & Hunters would not have that opportunity and it would turn into a messy battle of having limited rights -- full rights of reply.

So, therefore, I think the Board's original reasoning in that respect was fair, although I note, as you have, that the whole reason why the Board considered this route was to have Dean Baskerville's views here because you were not getting an indication from the other parties that they were going to call Dean Baskerville.

I think I am getting a sense from hearing Mr. Hanna this morning and reading the correspondence that flowed that he is somehow concerned that the Anglers & Hunters will not have the opportunity to canvass all of the issues with Dean Baskerville and

that matter, I submit, goes directly to what Mr. Turkstra was saying about the rights of cross-examining Dean Baskerville.

As my colleague Mr. Tuer pointed out, one of the overriding concerns that the Board should have is to avoid the appearance. I stress the word appearance because I am not suggesting for a minute that the Board would do that; avoiding the appearance of Dean Baskerville would be somehow judging this matter, taking some sort of position that would be regarded in reference to other witnesses or other expert witnesses.

I would urge you to -- remind you of that concern, but at the same time if there was full cross-examination allowed of him beyond the matters that were in his initial evidence as prepared by Mr. Turkstra, then the Anglers & Hunters, I submit, would be able to get into matters of import to them that may not be in the evidence of Dean Baskerville.

Of course subject, and I stress this, obviously to the rules of relevancy to this hearing and to demonstrating that it be a matter fit for cross-examination of Dean Baskerville that the Board should entertain.

In that respect I respectfully disagree

with Mr. Turkstra's submission that there should be some form of treating him and that part of his evidence that goes beyond what Mr. Turkstra terms as examination-in-chief.

I think the Board should be very leery of restricting the rights of cross-examination of parties other than of course to the questions of relevancy and scope of the hearing. But in those contexts, I think Mr. Hanna's concerns would, in large part, be met and therefore he would not, I submit, find the need to call Dean Baskerville as a witness.

I would support every attempt to be made to have the Anglers & Hunters indicate right now whether or not they wish to call Dean Baskerville as their witness. I agree there is no property in a witness, but I think at the end of the day after hearing the evidence and all submissions there may be an opportunity for them to so indicate; also, after they have had the opportunity to review the material prepared by Mr. Turkstra.

At least in my opinion, Mr. Chairman, it would seem rather all encompassing. Obviously they have their own agendas and may wish to introduce further issues, but Mr. Turkstra I think did a fine job of getting all the issues that were raised and are so

wide that perhaps it would alleviate the difficulty in Anglers & Hunters calling extra evidence from Dean Baskerville.

Then in my summation, Mr. Chairman, it is my view that the Board should proceed as it had originally intended and Anglers & Hunters should be pressed to indicate with a greater degree of certainty whether they wish to call Dean Baskerville, and perhaps my comments and most of the other counsels' will assist you in making that decision sooner rather than later.

Thank you.

THE CHAIRMAN: Mr. Freidin?

MR. FREIDIN: Mr. Chairman, in relation to comments made by Mr. Cassidy I can concur with him as to his submissions as to the timing of the evidence. I would like to make a few remarks about limiting of cross-examination of Dean Baskerville.

I share the concern voiced by Mr. Cassidy about limiting the scope of the cross-examination. I believe that it was my understanding as a result of the meeting we had with Mr. Turkstra that parties were going to be given the opportunity to indicate what issues or matters they wished to raise or believed -- they wished to raise with Dean Baskerville and that would go to Dean Baskerville along with transcripts, if

there were any in relation to that topic, or just an indication that parties wanted him to know that they would like to ask him questions in that area.

THE CHAIRMAN: Well, is it agreed or is there a consensus amongst the parties that if the Board were to proceed calling Dean Baskerville as its witness that we would have a witness statement prepared for Dean Baskerville and a clear indication from the other parties as to which issues they wish to address; in other words, sort of a witness statement/scoping process to deal with him for two reasons, as I can see it.

No. 1 to get a pretty good indication of what may or may not be relevant to that examination; and, secondly, to make sure that Dean Baskerville were apprised in advance of what might be asked of him so that (a) he can prepare, if he had to prepare, or could decide that that was an area that he could not comment on.

See, one of the problems with calling a witness, and I would suggest that this witness is different from other witnesses only in the respect that his expertise covers many of the facets which are before the Board as opposed to a circumscribed area of expertise and, as a result, we want to avoid if we can

having a situation where Dean Baskerville who has not been here for the preceding year's evidence is not put in a position of having to read all of the transcripts for the preceding year word for word as well as examining each and every one of the exhibits in order that parties can put questions to him which covers any facet of what we have dealt with to this point in time.

That is a tall order for anybody, particularly somebody who has been absent from the hearing on a regular basis. And it would be the Board's view, I think, that whatever Dean Baskerville is going to deal with would be set out in a witness statement and all of the parties would be required to submit a list of issues they wish to canvass with him.

First of all, has something along those lines, Mr. Turkstra, been discussed with the parties?

MR. TURKSTRA: That is almost exactly what we agreed to at the meeting - I don't know if the reporter can pick this up all right - but mm-hmm, I think it's fair to say --

MR. FREIDIN: I think we agreed on both the witness statement and scoping session but no interrogatories--

MR. TURKSTRA: Right.

MR. FREIDIN: --was the discussion.

MR. TURKSTRA: Or consensus.

MR. CASSIDY: I think in fact the purpose of the review of the transcript that Mr. Turkstra put together was that parties would have the opportunity, if they felt there were additional matters, to bring them to Mr. Turkstra's attention now or as soon as possible which we are all struggling with.

MR. FREIDIN: And I think the consensus of the meeting was that except for exceptional situations the issues that would be discussed or that somebody would really want to, or would be fair to put to Dean Baskerville for him to deal with were the subject matters that arose in his report, the action plan or any of the exhibits which were offered by him.

An example being, let's assume the habitat supply analysis were not referred to in the audit and in actual fact is, of course, the subject matter in some of the other documents which were filed, that would be a legitimate subject matter to indicate we would like to ask questions on.

If it was something completely new, how large is the moon, which isn't in any of the reports, then there would be some question as to whether it was really appropriate to have Dean Baskerville get up and answer. So my remarks would be taken in light of those

comments.

But just going back to the -- I have some concern about the statement by Mr. Turkstra that the cross-examination would somehow turn into or be looked upon as a direct examination if the cross-examination went beyond what the evidence-in-chief was.

That would be fine I suppose if all the evidence-in-chief covered every issue which everybody wanted to deal with, but it might very well be that Mr. Turkstra will not feel it is appropriate to do that and for that reason I believe that a proper examination or a full examination-in-chief controlled by the Board in relation to the issue of relevancy as suggested by Mr. Cassidy would be appropriate.

If the cross-examination in fact is proceeded with in that fashion I believe that OFAH would not be prejudiced in any way and that on some reflection they could indicate to the Board that if cross-examination was dealt with in that fashion that they in fact would not wish to call Dean Baskerville and we wouldn't have to deal with that as a potential problem.

And, therefore, I would support Mr. Cassidy in my submission that the OFAH should be pressed to indicate one way or the other whether they

are going to call him.

I again am not here to act as counsel for the OFAH but I think they should understand the difference between undertaking to ask him to come and undertaking that he will be here. I think the Board is probably more concerned with the latter because if all we get is, you know, they may ask him to show up, that doesn't help the Board on which way to go on this issue.

THE CHAIRMAN: No. The Board is determined I think that Dean Baskerville appear. The only thing that could really upset that resolve is the fact that Dean Baskerville himself chooses not to appear. He's outside the jurisdiction and I think he's probably beyond the jurisdiction of this Board in that sense.

As I understand it, Mr. Turkstra, he has effectively indicated his willingness to appear should the Board call him and may appear if some other party called him. Is that your understanding?

MR. TURKSTRA: I don't know anything about the latter part but the first part, he's prepared to come as a witness for the Board.

THE CHAIRMAN: Okay. So given that, I think we can all assume Dean Baskerville will at some

point make an appearance.

The question is: If we are going to call him, then we expect no other party to do so; if we are not going to call him, then we expect some other party to undertake to do so and Mr. Turkstra can find out whether or not Dean Baskerville would be willing to come if some other party called him.

And we don't expect any duplication of any of his evidence. We do not want to call Dean Baskerville, go through the process of developing witness statements and statements of issue, go through the scoping process and then find out at the end of that that another party still intends to call him. That sort of circumvents the whole purpose upon which the Board entered this discussion in the first place.

Now, going back to your comments, Mr. Freidin. If the Board were to say that the direct examination would be confined to the audit and the collateral documents to the audit, including the response by the Ministry, and that the cross-examination would be open sufficiently to deal with any of those documents raised in direct or any issues which arise out of those documents in the context of the witness statement as developed, would that satisfy the various parties as to having the

opportunity to cross-examine on issues of importance to them?

MR. FREIDIN: What was the last part of your last comment? I got you as far as saying cross-examination would be sufficient if it raised -- dealt with issues raised in direct or arise out of the witness statement.

THE CHAIRMAN: Arise from the documents raised in direct or in accordance with the issues developed in terms of the witness statement.

In other words, we assume that a witness statement is going to be developed which is going to be based in part on the audit, the response to the audit and all of the collateral documents.

MR. FREIDIN: I don't think that -- if in fact -- when you say the documents raised in direct and the issues developed in the witness statement, that means only those matters which are written about in the witness statement or are raised in oral evidence in direct.

I do not think that would deal with the problem because I have -- no one knows, for instance, whether or not the evidence-in-chief or the witness statement will or will not refer to, I'll give you the same example, the habitat supply analysis. That

specific issue I do not believe was raised in either the audit or in the action plan, it may not appear in the witness statement, it may not come out of the mouth of Dean Baskerville for very good reasons in evidence-in-chief.

THE CHAIRMAN: Would it appear in a statement of issues submitted by the parties that were interested in that particular issue?

MR. FREIDIN: It should.

THE CHAIRMAN: Okay. So if it were expanded to include statements of issue submitted by the other parties, all of those things, and therefore the Board would permit cross-examination on all of that.

MR. FREIDIN: Sure, that is just basically doing what in fact the Board has been doing all along, saying raise it in your statement of issues.

THE CHAIRMAN: Subject only to relevancy.

MR. FREIDIN: Yes.

THE CHAIRMAN: The issue has to be relevant to matters before the Board for determination.

MR. FREIDIN: Right. I think that would cover it.

THE CHAIRMAN: Mr. Hanna?

MR. HANNA: Mr. Chairman, if it would be

appropriate if I could have maybe five or ten minutes just to speak with Dr. Quinney on these matters and come back and address the Board on this. I feel we are closing --

THE CHAIRMAN: Okay, because we want to try and settle this now because there is some work to be done between now and October, if that is when Dean Baskerville is going to be called, and that means Mr. Turkstra will have to be presenting the transcripts and other documentation to him and start working on witness statements and we will also have to have the other parties also working on statements of issue.

Just one minute, Mr. Turkstra. We want to go around and make sure all of the parties have had their say and then perhaps we will end with you.

Mr. Edwards?

MR. EDWARDS: Thank you, Mr. Chairman, I will be very brief. If I might just make some comments before Mr. Quinney and Mr. Hanna retire because I have got to retire myself very shortly.

I would be quite content with the proposal, however one issue raised by Mr. Turkstra causes me a lot of concern and that is conversion of the cross-examination into a direct examination and I would --

THE CHAIRMAN: Well, we are not certainly making a ruling on that at this point in time. That was something put forward by Mr. Turkstra to see if some limits could be put on the scope of this examination, but that was more or less put forward for discussion purposes at this stage.

MR. EDWARDS: Well, my discussion on that is this, Mr. Chairman, that I think it would lead to an unnecessary series of rulings and confrontations as to whether one had strayed into a field where one should be examining directly or cross-examining.

I think the Board's ordinary rulings with respect to relevancy, repetition, et cetera would be quite appropriate in the circumstances and if the cross-examination is permitted openly and fully on the issues raised, arising in the documents tendered, the evidence-in-chief and the statements of issue, I think that should squarely deal with the issues of relevancy.

As well it would be my submission it would be appropriate to deal with it really in the ordinary fashion rather than directing it --

THE CHAIRMAN: See that would be presumably where the Board might get involved in terms of ruling on the relevancy of the issue.

When statements of issue are put forward

and the Board takes a look at the statement of issues and panels make their argument as to whether it's relevant or not, the Board may on a particular issue rule that that will be an issue that won't be addressed by Dean Baskerville if in fact it felt it was irrelevant to the matters for consideration before the Board and we could sort of deal with it before he's even called to speak.

Because I think in fairness to Dean Baskerville, if the issues are deemed relevant he has to prepare for them and Mr. Turkstra could be counselling him on and providing the documentation from the hearing relevant to that particular issue.

MR. EDWARDS: Mr. Chairman, if I may just raise one separate issue while I'm here.

I would appreciate getting some direction from the Board and other counsel as to when the cross-examination on Panel 14 might be expected to recommence. The last I heard it was anticipated that the two witnesses, the pesticide witnesses may be as long as two weeks. I'm just wondering if that has changed at all?

MS. MURPHY: I'm going to be asking the same question, Mr. Chairman, in my submissions because we do have some concerns of Dr. Ritter's availability

of time.

THE CHAIRMAN: How long do you expect to be in direct?

MS. MURPHY: I expect that we will be half a day to one day in direct; closer to one day.

THE CHAIRMAN: For both the witnesses?

MS. MURPHY: That's right.

THE CHAIRMAN: Well, can we have an indication from the other counsel as to how long they might be in cross?

MS. CRONK: I wouldn't expect to be more than half a day, sir.

THE CHAIRMAN: Mr. Castrilli?

MR. CASTRILLI: At this point, Mr. Chairman, I would think at least two days.

THE CHAIRMAN: Two days. Ms. Seaborn?

MS. SEABORN: Two hours.

THE CHAIRMAN: Mr. Hanna?

MR. HANNA: About a day, Mr. Chairman.

THE CHAIRMAN: One day.

MR. HANNA: No more than a day.

THE CHAIRMAN: That is about four days.

MR. FREIDIN: I believe counsel for Nishnawbe-Aski Nation and Treaty No. 3, who we did get an estimate from the last time -- I think NAN was half

a day and Treaty No. 3 said a couple of hours.

THE CHAIRMAN: So that might be five days. And yourself, Mr. Edwards?

MR. EDWARDS: I'm not proposing to cross-examine.

THE CHAIRMAN: Okay. Looks like about five days. So all together...

MS. MURPHY: You just made Dr. Ritter a happy man.

THE CHAIRMAN: Sorry?

MS. MURPHY: You just made Dr. Ritter a happy man.

THE CHAIRMAN: Well, with direct we may be six days of evidence, but we should be able to finish in six.

MR. EDWARDS: Thank you very much, Mr. Chairman.

THE CHAIRMAN: Okay.

Ms. Seaborn?

MS. SEABORN: Mr. Chairman, I just have a couple of comments on this issue.

First of all, Mr. Turkstra has invited all parties to comment on the exhibit list and transcript excerpts that he's provided to people. We have not responded to Mr. Turkstra.

We have no difficulty with the material that has been provided and it was always our understanding as a result of discussions at our initial meeting in June that what we would receive next would be preparation of a witness statement that would be circulated and, as has been the procedure in the past, parties would then file a statement of issues if they wished the right to cross-examine this witness.

I just wanted to be clear when we were discussing the statement of issues that that, as has been the normal course, would be something that would happen after parties had an opportunity to review the witness statement with their client.

THE CHAIRMAN: That would be correct.

MS. SEABORN: And the only other submission I have is that it's our client's position that Dean Baskerville should be here once; i.e., he should not be recalled.

THE CHAIRMAN: And you have no objections I take it for his appearing at the end of the Ministry's case?

MS. SEABORN: No, that is fine. And I agree with Mr. Cassidy's submissions as to fairness in that regard.

THE CHAIRMAN: Any other parties wish to

address these issues before we retire for a short break?

(no response)

Mr. Turkstra?

MR. TURKSTRA: I would like, if I could, to clarify one thing, Mr. Chairman. The list of subject matters that we had prepared was intended to be a list of what we construed to be included within the terms of your order.

And, for example, Mr. Freidin raises the term--

MR. FREIDIN: Habitat supply analysis.

MR. TURKSTRA: --habitat supply analysis, thank you. I don't recall that specifically as a subject matter and I'm going to assume for a minute that it is not included, what he means is not included in Section 6 of my outline which is integrated management for habitat and timber.

But if it's not there, then it was my position that I was trying to draft a table of contents to the witness statement based on the transcripts and the exhibits. That was a table of contents of the subject matters that came within your order; that is, essentially the audit that had been referred to in these proceedings.

And it was my position that if there was a subject matter beyond that that any parties wanted to have included in his evidence, they would have to come back to the Board and say: Well, habitat -- Mr. Freidin, I am sorry, but you will have to give it to me again.

MR. FREIDIN: Habitat supply analysis.

MR. TURKSTRA: Habitat supply analysis is a subject matter that he should testify on and while it's not directly in the audit we feel that important, and then I would go to work on preparing him on that.

THE CHAIRMAN: That would likely be raised in the statement of issues submitted by the other parties.

MR. TURKSTRA: All right. But I just don't want to have a misunderstanding that we are in some way informally going beyond the scope of your record.

I want to make it very clear that my understanding of what I'm doing is I'm interpreting your order, staying within the scope of that order and I will try and draft a witness statement that meets with that and that all parties have in this document my best interpretation of that order.

If there are subject matters which other

parties want Dr. Baskerville to testify on that are not included in this list, then it would be my view that they should come back and ask the Board to amend its order of March the 6th.

What I'm saying is that I don't want to be put in the position, nor should I be put in the position of unofficially amending your order by expanding his witness statement in response to questions posed.

THE CHAIRMAN: No. I think we have to put some bounds on his evidence, so the bounds we put on the evidence in the first instance were dealing with the audit, the collateral documentation or ancillary documentation to the audit and the response and ancillary documentation to the response.

Now, should the other parties wish to address other issues they would raise them in their statements of issue and the Board would then in effect rule on those statements of issue as to whether or not those subject matters were relevant to this examination and, if relevant, would be included and, therefore, you would prepare Dr. Baskerville for questions on those other issues and, in that way, we would be able to accommodate, to some extent, the particular concerns of various parties and they would indicate those concerns

through their statements of issue.

MR. HANNA: Mr. Chairman, if I might just mention, I can see a potential bottleneck coming that the witness statement might be prepared, the statement of issues are then submitted, statements of issue saying: Well, this issue wasn't covered in the witness statement because of Mr. Turkstra's I think quite fair interpretation of the Board's order, then you have to go back to the witness statement.

I'm wondering if it isn't somewhat contrary to our normal procedure that some of those issues might not be more properly brought forward at this time and I think Mr. Freidin has made a good example of that, the habitat supply analysis.

THE CHAIRMAN: Well, it's difficult for some parties to operate in the abstract. The normal process, Mr. Hanna, has been for the parties to in effect be responding to a statement of issue -- to a witness statement and if they see that what is in the witness statement doesn't cover their concern or doesn't cover an issue they wish to address, they come forward with a statement of issues and we would then have a session whereby those statement of issues which have been distributed amongst all the parties would provide the parties with an opportunity to speak to

them and at that time we would rule on whether or not they are relevant.

Does that pose any difficulty for you, Mr. Turkstra?

MR. TURKSTRA: No, sir.

THE CHAIRMAN: Anybody else want to comment before we retire?

(no response)

And when we come back, Mr. Hanna, we want you to be able to give us some comments on what has taken place to the extent that you will be indicating clearly that if the examination of Dean Baskerville goes as we have discussed, you will not be calling him as a witness.

In other words, we are not going to proceed with this if a party is still indicating that they are going to call Dean Baskerville as a witness and, in that case, we would want an undertaking from that party that they will in fact call him. We can at least settle that today.

Mr. Turkstra, perhaps during the break you could be available to consult with any of the parties over what has transpired so that when we come back we will have a clear understanding of what the scope of Dean Baskerville's examination will be?

Okay. I think we will break for 20 minutes. Thank you.

---Recess taken at 2:05 p.m.

---On resuming at 2:30 p.m.

THE CHAIRMAN: Thank you. Be seated. Mr. Hanna?

MR. HANNA: Mr. Chairman, I have had a chance to speak with the Federation. It appears at this time that the concerns that we had in terms of certain issues that we wished Dr. Baskerville to deal with have been addressed, and we appreciate and accept the suggestion that you made that each party be permitted to prepare a statement of issues and topics by their choice and that they would be then provided in terms of relevancy to the hearing.

As a result, on behalf of the Federation, I undertake not to call Dr. Baskerville, subsequent to his appearance as the Board's witness subject to the provisions of his appearance as discussed and they are; namely, the preparation of a witness statement, followed by the issuance of statements of issues by all parties, and the subsequent determination of those issues in terms of relevancy by the Board through a scoping session.

THE CHAIRMAN: Very well. Now, just

before the Board reiterates what its understanding of all of this is, so that it is quite clear amongst all parties, we would like to get some indication of the timing that might be involved.

Mr. Turkstra, can you give us any indication as to when you might have a witness statement prepared with respect to these matters?

(microphone feedback)

MR. TURKSTRA: Oh, I'm sorry, I thought they fixed it over the break. The last time I will touch it, sir, I will never touch it again no matter what happens whether you can hear me or you can't. I will try it again.

What we basically agreed to was that by the end of next week I am to have from all of the parties their comments on the list that Ms. Valiante and I prepared as to what we see the table of contents of Dr. Baskerville's witness statement.

The minute I have that in final form it will go to Dr. Baskerville, but bear in mind that that will probably not be until the afternoon of the 15th. He and I then have to get together, I have to get the transcripts to him. Some of this I can work on in advance because I think we are pretty well home free on most of this. I am going to get going on that as a

matter of fact tomorrow now that I know that there is no question about who is calling him. And I am hoping to have a draft witness statement, I would hope, by the end of the first week of September.

Now, that's pushing Dr. Baskerville, and I say that without having been able to cover this schedule with him, but subject to any problems we have I would hope to have a draft witness statement by the end of the first week of September, and presumably it shouldn't take more than a couple of weeks to get a statement of issues back from the parties on that so that if there is any ruling to be done by the Board that might be done in the latter part of September or the first part of October.

Now, that's a -- can I call that a hopeful schedule, sir--

THE CHAIRMAN: Okay.

MR. TURKSTRA: --as opposed to any kind of assurances?

THE CHAIRMAN: All right. But I think we should all be working towards having the statements of issues in from all the other parties in response to the witness statement by the end of September, and then we would hold a scoping session on that very early in October so that the end result of the scoping session

would be the issues which Dean Baskerville might be expected to address and then you can instruct him, Mr. Turkstra, on those issues and then he would appear whenever he can be scheduled at the end of the Ministry's case.

Now, it is the Board's understanding, therefore, that the earlier ruling will in effect stand, that the Board will call Dean Baskerville as its witness. He will be dealing with the issues identified by Mr. Turkstra as a result of his putting forward the material to the other parties and that will comprise ultimately a draft witness statement to which all parties will respond by way of filing a statement of issues.

The Board will then hold a scoping session on the statement of issues and determine which additional issues to those contained in the witness statement will or will not be addressed by Dean Baskerville.

Any documents that are going to be dealt with as a result of any further issues identified by the other parties should be identified in the statements of issue because the Board will not want to entertain requests when Dean Baskerville is here to have him address any other documents other than those

that have been identified in fairness to him and in fairness to the proceeding in general so as to not prolong it unduly.

We will then work towards the schedule that I have just outlined. Hopefully by the end of the first week of October, beginning of the second week of October we will have identified through a scoping session all of the issues to be identified and addressed by Dean Baskerville.

Now, as to location of calling Dean Baskerville, there appears to be I think a general consensus that he should probably be called in Toronto.

Do any parties have any objections to that course of action?

(no response)

Very well.

Mr. Hanna?

MR. HANNA: I think we should just note Mr. Edwards is not here, Mr. Chairman.

THE CHAIRMAN: That is true, but I -- was this canvassed at all, Mr. Turkstra, as to where he might be called at the last session you had?

MR. CASSIDY: To assist, I think it was a matter of the parties agreed at the time to let the Board make that decision and I think that's what it's

doing today.

THE CHAIRMAN: Okay. Well, the Board rarely gets such a magnanimous opportunity at the request of the parties and, therefore, we shall make the decision that Dean Baskerville will be appearing before the Board in Toronto at the relevant time.

Okay. Ms. Murphy?

Are you ready to go on with your witnesses?

MS. MURPHY: Yes, we are ready to go.

THE CHAIRMAN: Okay. Well, just before you go, one more matter and that is the scoping session with respect to Panel 15. I believe the statements of issue with respect to that panel are due today; is that correct?

MR. CASSIDY: I understand that's the Board's ruling. I don't know why I have to get up and do all this.

MS. CRONK: I didn't know.

MR. CASSIDY: I didn't mean you, Ms. Cronk, my other colleagues who surely read the mail. But, in any event, my understanding from your order is that today was the deadline and I can speak to my colleague Mr. Cosman, I'm sure he can confirm that, but I understood today was the date.

And if I could just go back -- bring you back to the matter of Dean Baskerville one more time, am I correct that your intention is to call him as a witness at the conclusion of MNR's case?

THE CHAIRMAN: That's correct.

MR. CASSIDY: Thank you.

MS. MURPHY: Well, I am not entirely sure, but I don't believe we have received any yet and if we have, it has only been one statement of issue.

THE CHAIRMAN: Okay. Well, obviously because of the break the parties maybe lost track of where we are or where we were and, under those circumstances, we can extend the date for submission.

They should be in I think by the end of this week so that we can have a scoping session possibly towards the end of the following week for 15. So that will allow sufficient time for counsel to prepare the witnesses who I guess will be called some time in early October.

Is that the present plan?

MR. FREIDIN: Oh no, no. I think the present time it could be as early as September the 11th, the way we calculated our time.

THE CHAIRMAN: Okay. So you will definitely have direct in prior to us breaking for the

Dryden session; is that correct?

MR. FREIDIN: By September the 11th, that's correct.

THE CHAIRMAN: Okay.

MS. SEABORN: Could we set a time today, Mr. Chairman? There may be other counsel who would be interested in being here for the scoping session of Panel 15.

THE CHAIRMAN: All right.

MR. FREIDIN: Mr. Chairman, I have got a little bit of a problem with the end of next week. If it is agreeable to the Board and to other people, Monday -- if we are sitting Monday, August the 21st, it would be preferable for the scoping session -- sorry, the 22nd, Tuesday the 22nd, as opposed to the end of next week.

THE CHAIRMAN: All right. This scoping session may be a little lengthier than some of them because of the subject matter of Panel 15. It may be a rather lengthy panel and there may be a number of issues that have been held over from other panels.

So I think if we set it for Monday the -- sorry, Tuesday the 22nd, we might as well do it when we commence at 1:00 p.m. on the Tuesday.

Mr. Turkstra?

MR. TURKSTRA: I just wondered if I might be excused.

THE CHAIRMAN: Yes. I don't think Mr. Turkstra need wait around any longer now that we have settled the matters with Dean Baskerville.

Thank you for your attendance. If you move it you may get out on the 4:40 or 4:50.

MR. TURKSTRA: Thank you very much.

THE CHAIRMAN: Ms. Murphy?

MS. MURPHY: Thank you. If I could ask Dr. Ritter and Mr. Kingsbury to come up and take their places.

THE CHAIRMAN: Perhaps we might swear them, Ms. Murphy?

MS. MURPHY: Yes. And I understand that Dr. Ritter would prefer to affirm, sir.

THE CHAIRMAN: Very well. Mr. Kingsbury, would you step forward, please.

PETER KINGSBURY, Sworn
LEONARD RITTER, Affirmed

MS. MURPHY: This is, as you know, the recommencement of the second part of Panels 12 and 13, and before I make my opening remarks I would like to take the opportunity to file a number of exhibits and I prefer to file all of the exhibits that we expect to be

used by both witnesses at the outset so that we don't need to mark them later.

I believe we are at Exhibit 707, that was my understanding. Is that correct, sir?

THE CHAIRMAN: Yes, that is correct.

MS. MURPHY: Then the first document I have is the supplement to the curriculum vitae of Peter Kingsbury and I propose that that be marked as Exhibit 707.

THE CHAIRMAN: Very well. Exhibit 707.

---EXHIBIT NO. 707: Supplement to curriculum vitae of Peter Kingsbury.

MS. MURPHY: And I am also providing a curriculum vitae for Leonard Ritter which I propose be Exhibit 708.

THE CHAIRMAN: Very well.

MS. MURPHY: And both of these documents have been provided to my friends previously.

---EXHIBIT NO. 708: Curriculum Vitae of Leonard Ritter.

MS. MURPHY: Now, with reference to the evidence of Dr. Ritter, I have a package of - (microphone feedback) - I have hard copy of a series of slides that will be referred to by Dr. Ritter.

In fact, what I am going to be giving you

is two packages. One is a series of overheads, the pages are numbered -- in the one that will be the exhibit I have marked the pages A to J, and Dr. Ritter will also be showing a few slides and I am going to give you those separately.

So I would suggest that the overheads be marked Exhibit 709, pages A to J.

THE CHAIRMAN: Okay. Hard copies of overheads, Exhibit 709, numbered A through J.

---EXHIBIT NO. 709: Hard copy of series of slides numbered A through J.

MS. MURPHY: And with respect to the photographs, I have prints of the photographs and also some photocopies and I would suggest then that that be Exhibit 710, numbers 1 to 5.

There are numbers on the back of the photographs, and we will have to ask Dr. Ritter to identify and describe the photographs as he puts in his evidence.

THE CHAIRMAN: Very well.

---EXHIBIT NO. 710: Prints of photographs numbered 1 through 5 to be referred to by Dr. Ritter in evidence-in-chief.

MS. MURPHY: And with respect to the evidence of Mr. Kingsbury, I have two exhibits to file. One is a series of overheads. I have marked the

exhibit pages A to D, there are four pages, and I would suggest that that be Exhibit 711.

THE CHAIRMAN: Very well.

---EXHIBIT NO. 711: Hard copy of series of overheads numbered A through D to be referred to by Mr. Kingsbury in evidence-in-chief.

MS. MURPHY: And finally what I would suggest be Exhibit 712 is an article that Mr. Kingsbury will be referring to entitled: Pesticides in Forestry and Agriculture, Effects on Aquatic Habitats with a series of authors. It is probably easiest for us to cite it as Kingsbury, et al.

---EXHIBIT NO. 712: Article entitled: Pesticides in Forestry and Agriculture, Effects on Aquatic Habitats authored by Kingsbury, et al.

MS. MURPHY: And also before I begin my remarks, I would like to introduce to you a Deborah Prupas. She is a lawyer from the Department of Justice and I thought it would be nice for people to know who she was. This is her first visit to the hearing.

THE CHAIRMAN: Thank you. How do you spell her last name?

MS. MURPHY: P-r-u-p-a-s, I believe.

THE CHAIRMAN: Thank you.

MS. MURPHY: As you know this is a

continuation then of Panels 12 and 13. The panel as a whole deals with maintenance of the forest and includes tending and protection. Certain of those activities involve the use of pesticides and you will also recall from Panel 11 that certain aspects of regeneration activities can also involve the use of pesticides, in particular herbicides.

Mr. Kingsbury was originally intended to appear together with Panels 12 and 13 in that group and of course, as you understood, his commitments didn't allow him to do that, so we had arranged for him to appear at this time.

Given certain comments from the Board during the motion brought by Forests for Tomorrow and in your Reasons for Decision, the Ministry of Natural Resources understood that the Board would like to have further information about the federal registration process, and we have invited Dr. Ritter here to speak to you on that.

And you had also advised that it would be preferable in your view, and certainly was in the view of others, to have both witnesses appear together.

Dr. Ritter has gone to a fair bit of difficulty to clear his time to be here with us together and we would like to thank him for that. We

were also concerned about the time, but I think people have already advised us about how much time they think they will be and that's very helpful.

Dr. Ritter had another -- a couple of other matters he wanted me to raise with you and I will leave that towards the end. I just have a couple of general comments to make first.

As you know, it is our view that it is most important for the Board to understand the processes that limit the potential for adverse human health effects. The important aspects of those processes are the federal regulation of pesticides under the Pest Control Products Act, provincial approval and permitting systems which deal with individual projects in forestry; that, of course, is administered by the Ministry of the Environment; and further safeguards which are provided through documents such as MNR's manuals and guidelines for field applications.

Now, you have heard some evidence about all of these matters, you will be provided further information about the federal regulatory process by this part of the panel. Dr. Ritter will describe first the federal regulatory process and, in particular, the input of Health and Welfare Canada in that process.

The second matter he will discuss is the data requirements for toxicity assessments; next, Dr. Ritter will explain exposure assessment; and, finally, he will deal with risk assessment as it relates to human health.

Now, with respect to potential effects of registered pesticides on other aspects of the natural environment, as we advised earlier, the Ministry of Natural Resources believes that the situation is a little different. The products discussed are intended to affect certain parts of that natural environment and in so doing have potential to affect others.

That being the case, it was our view that the Board should be provided with the best information possible on the potential effects of these products on those aspects of the natural environment most likely to be affected. In attempting to do this we were looking at basically two problems that we had.

The first one is that I am advised, and I am sure these witnesses will be able to tell you, that there is tremendous literature that deals with these matters and we wanted to find a way to provide a concise summary, relevant information without having to enter literally hundreds of reports, reviews, et cetera.

The second problem was that people who tend to deal with these matters on a daily basis tend also to have fairly specific focus, and we were concerned that if we were to provide witnesses with specific expertise in each and every aspect of the matters that could be raised that would involve many, many people.

So in attempting to deal with those problems, as you are aware, we have taken the approach of using the process that is facilitated by the ESSA group and have produced that document that you have, Document 4, which is Exhibit 604C, I believe.

You will recall that the methodology was described by Dr. Kingsbury -- Dr. McNamee actually in Panel 8 at some length. The methodology involves obtaining input from a cross-section of experts initially at a working session in which the experts prepare draft reports. The drafts are subsequently reviewed by workshop participants and, in this particular case, the draft was subsequently reviewed by a second group of experts, an outside peer review.

The authors of each section of the report are listed on page 6 and the outside reviewers are listed on page 7 of the document. The end result is a concise summary of relevant information. The document

sets out the framework for analysis, the conclusions of the experts and the information used to arrive at the conclusions and that document has been subject to peer review.

With respect to this information, the person we are calling is Mr. Peter Kingsbury and Mr. Kingsbury will discuss the following topics:

First, he will discuss the federal regulatory system and post-registration research with particular emphasis on aspects that deal with the generation and evaluation of environmental toxicology studies related to forestry pesticide use. That's the generation and evaluation of environmental toxicology studies related to forestry pesticide use.

Secondly, he will describe the principles involved in assessment of potential environmental effects and in doing that will explain how such assessments are organized.

And finally he will discuss the use of information such as that found in the ESSA Document and he will take us to the conclusions reached by the participants in the ESSA exercise and comment on the conclusions.

Now, as I advised a little earlier, Dr. Ritter did ask me to mention a couple of things to the

Board before we begin, and this will would just make a minute, but you will recall you were advised during argument on the motion brought by Forests for Tomorrow that there is currently underway a legislative review of the federal regulatory system. That group is called the Pesticide Registration Review. It is headed by a gentleman called Ghislain LeBlond and he was appointed by the Prime Minister's office.

This committee includes representation from a number of interested persons and will invite submissions from the public. It is anticipated that the review will take many months and will result in a report and recommendations to the federal government.

Now, the reason that Dr. Ritter wanted that mentioned is that he would like you to understand that he is discussing the federal regulatory system obviously as it exists now and that he cannot anticipate, of course, the results of the deliberations of that committee or of the federal government upon release of that report, and he feels it would be improper for him to do so. And I am sure you will understand the situation, but I thought it wise to raise it with you at this time.

The second matter, of course, Dr. Ritter was asked to appear here fairly recently. He has not

had the opportunity to review all of the open literature that exists with respect to specific products. He advises it would take many months to do that and we certainly have not asked him to do that.

As you are aware, it is our position that the focus here should be on the regulatory process itself. But, in any event, Dr. Ritter would like you to understand that as a practical matter he may well be limited if one looks at specific information, given that he hasn't done a specific review of all information that exists at this point in time.

As a related matter and one that, of course, has come up before is that some of the information that does exist is information that belongs to third parties.

Now, at this point we don't know whether anyone will ask Dr. Ritter about that kind of information or whether anyone will ask the Board to make orders with respect to that kind of information. I just thought at this point it would be wise to mention this and to point out that if this kind of situation arises we may be in a situation of asking the Board to consider whether notice should be given to other parties that may have an interest in whether that information be produced.

THE CHAIRMAN: I take it this is information of a proprietary nature?

MS. MURPHY: Yes, sir.

And finally, Dr. Ritter commonly goes to public meetings and so forth and explains how his department functions and what they do, and he would like you to know that he's here in the same role as a public servant advising about what he does and he's prepared to do that. He's interested in assisting the Board and the other parties in understanding what he does.

And, therefore, we would ask that Leonard Ritter, based on the information that has been provided to the parties, the updated and completed CV -- of course Dr. Ritter's entire CV, we would submit that Dr. Ritter is an expert in toxicology and the work of Health and Welfare Canada in the regulation of pesticides in Canada and would ask him to be so qualified.

THE CHAIRMAN: Any objection by anyone?

(no response)

Very well, be so qualified. Thank you.

MS. MURPHY: And Mr. Peter Kingsbury is an expert in the environmental effects of pesticides used for timber management and, in particular, in the

execution and evaluation of scientific investigations about those effects.

THE CHAIRMAN: Any objections?

(no response)

Qualified in those areas.

MS. MURPHY: Thank you. And at this point I think I will just ask Dr. Ritter to commence.

DIRECT EXAMINATION BY MS. MURPHY:

Q. And you can have your machine ready.

DR. RITTER: A. All right, I'm all set. Is this on or off? We're off and away.

Q. I think so.

A. Mr. Chairman, in preparing for my presentation here today we felt that --

THE CHAIRMAN: Can everyone hear?

MS. CRONK: Not very well, sir.

DR. RITTER: Is that better?

THE CHAIRMAN: Yes.

DR. RITTER: In preparing for my appearance, Mr. Chairman, before the Board we felt that the most expedient way in which to present the information which I intend to present was in the form of a quasi-formal presentation.

With your permission I would like to proceed on that basis and take perhaps 35 or 40 minutes

to tell you a little bit about the process involved in the regulation of pesticides, specifically the role of the Department of National Health and Welfare.

I'm anxious to answer any questions which you might have or clarify any confusion that I may create during the course of the presentation. Frequently we find though that some of the confusion is in fact clarified in a fuller context of the presentation, so I leave it to your discretion. Either way is fine by me.

THE CHAIRMAN: Ms. Murphy, we are going to proceed formally in that the other parties will have an opportunity to cross-examine at the appropriate time?

MS. MURPHY: Oh yes, that's fine. It's easier for Dr. Ritter to simply put in his evidence in the way he's used to doing it, so we thought it would be easier for him.

THE CHAIRMAN: Very well.

DR. RITTER: I wonder if I could just stand while I do this because I can see the Board better from here. We are going to need the lights out over here if I can. Thank you.

Pesticides are regulated in Canada under federal statute. The piece of legislation which

governs the regulation of pesticides is the Pest Control Products Act. What I would like to do initially is to show you the routing of a pesticide submission as far as those regulations are concerned.

As I mentioned, the pivotal piece of legislation is the Pest Control Products Act for which legislative authority resides with the Minister of Agriculture. So submissions to register a new pesticide in Canada or for expansion of an existing registration are made to the Department of Agriculture.

The Department of Agriculture in turn calls on a variety of agencies...

THE CHAIRMAN: Dr. Ritter, could we ask you to slow down a little bit because the court reporter has to take down every word.

DR. RITTER: I'm sorry, I will.

THE CHAIRMAN: Thank you.

DR. RITTER: The Department of Agriculture in turn calls on a number of other agencies and other departments within the federal network to carry out its work and I would like to spend a few moments reviewing the responsibilities of these various departments.

First is Health and Welfare, the department that I represent here, and I'm going to have

a little more to say about that in a moment, so I'm going to leave it.

The Canada Department of the Environment is responsible for assessing essentially environmental impact associated with pesticide use. Department of Fisheries and Oceans, as the name would imply, is responsible for the assessment of potential impacts on aquatic habitats associated with pesticide use and frequently are involved in review of petitions where the use of a product may impact on aquatic environment.

Department of Agriculture itself is involved in reviewing the efficacy of the product. In contrast to regulations set out in the United States by the Environmental Protection Agency, in Canada a product must be shown to work before it can be registered. That is, as I mentioned, in contrast to what appears in the United States because in fact the requirement for the product to work doesn't exist within EPA regulations. The Americans take the view that the marketplace will determine the value of the product and that need not be entrenched in regulation.

The Department of Forestry, which is a relatively new department although previously carried out its mandate under the Department of Agriculture, is involved in pesticide submissions involving the

application to forests. They will be involved in a variety of studies which may include environmental impact, aquatic impact and also on the efficacy of pesticide used within the forestry sector.

The department, as you know, which I represent principally is the Department of Health and Welfare. I would like to tell you a little bit about the responsibilities of that department and how these responsibilities are divided up internally.

Organizationally within the Department of National Health and Welfare, the umbrella organization is the Health Protection Branch and among other activities there are two directorates within the Health Protection Branch that are concerned with the registration and use of pesticides.

One is the Food Directorate. The Food Directorate is concerned with the use of pesticides in that they may find their way into foods which will subsequently be sold and consumed by Canadians as well as for export. To carry out their responsibilities the Food Directorate is responsible for what we call establishment of maximum residue limits or, in other words, the Food Directorate is responsible for establishing the maximum quantity of a pesticide residue which may be present lawfully in the food at

time of consumption.

The other group within the Health Protection Branch that is interested in the use of pesticides is the Environmental Health Directorate, that is the group that I represent.

The Environmental Health Directorate has two interests in the use of pesticides. One relates to the assessment of the presence of pesticides in Canadian drinking water and although the establishment of guidelines for contaminants in drinking water is provincial jurisdiction, recommendations for maximum limits which may be permitted in water are established on the basis of a consultation process in which the federal and provincial departments both play a role.

Ultimately these consultations lead to establishment of what I have referred to here as the national drinking water guidelines which frequently, if indeed not all the time, are implemented as lawful limits by the various provincial regulatory agencies.

The second responsibility of the Environmental Health Directorate and the one with which I will spend the most time this afternoon is the assessment of worker and what we refer to as bystander exposure during the routine use of pesticides in many various applications in which they can be used.

I'm going to spend the next three or four slides going through the kinds of toxicology studies that we require and I'm going to take a moment or two as we go through them to explain the scientific logic behind them and the kind of information that they provide.

The simplest studies that we require both in terms of their complexity and in terms of their cost are what we refer to as acute toxicity studies. By definition acute studies tend to be those studies which look at potential effects following the single usually high dose exposure to the chemical.

These studies are carried out on both the active ingredient and the formulated product and these two are very different commodities. By way of example there is approximately 450 active ingredients in Canada but roughly 5,000 registered products.

Acute studies, as I mentioned, are required on both the active ingredient alone as well as the total product which is sold at the retail level containing that active ingredient.

The studies that we require of these two components, as I mentioned, are these acute toxicity studies and they will include what we call the lethal median dose study or the LD50.

This is a study which is designed to tell us a little bit about the dose that is required to achieve death in 50 per cent of the test population. And to assure that there is not significant differences in the sensitivity as a function of route, these studies typically are carried out following oral ingestion, following application to the skin, and following inhalation.

Now, there are circumstances where any of these studies may be waived if toxicologically they are considered to be inappropriate. For example, it would be pointless to carry out an inhalation study on a product which is sold and used as a solid.

This is generally a matter of judgment and often a matter of liberation between the petitioner and the Health Protection Branch.

THE CHAIRMAN: Are all of these studies vis-a-vis humans or any of them?

DR. RITTER: No, none of these studies are in humans. The studies are carried out typically in rodents generally speaking but are frequently carried out in non-rodent species as well.

In the case of the LD50 study, for example, the majority would be carried out in rodents, but frequently these studies are also carried out in

such animals as rabbits, sometimes higher primates.

These studies -- I should say in answer to that question, Mr. Chairman, the situation in Canada is pre-market; that is, all products which we will be discussing must undergo this testing scheme before they can be registered. Because these agents are not therapeutic and are not intended for human use, indeed not even for human contact, the objective of course is to avoid human contact and consequently are never tested in humans.

The second series of --

MR. MARTEL: Can I ask a question?

DR. RITTER: I'm sorry.

MR. MARTEL: Did you say all these products were pre-market tested?

DR. RITTER: That's correct, when I'm referring to the public health aspects. Canada is a pre-market test organization unlike many of our European counterparts where the bulk of the testing may be carried out once the product has been introduced into the market. All of the toxicological studies that I will give you -- that I will describe must be carried out prior to registration of the product.

The second series of studies which we see in this acute package are irritation: dermal and eye.

Irritation studies as the name implies tell us a little bit something about the potential of a chemical to cause an irritant effect. And as the case of the LD50 study, these studies are carried out typically on the active ingredient and on the product. They are carried out by application both to the skin and to the eye.

I'm sure many of you are aware that the use of eye irritancy studies has fallen out of favour in the last few years and many animal rights groups feel that this is an inappropriate study to carry out.

We share that conviction and, generally speaking, if a chemical or its formulated product is considered to be a skin irritant, we will generally be prepared to waive the requirement for an eye irritancy study provided that the petitioner is prepared to concede that it is likely to be an eye irritant.

The third group of these short-term studies that we require is sensitization and to put it another way that is simply a series of studies that tell us a little bit about the potential of the chemical to cause allergic effects. Once again these studies are typically carried out on the active ingredient and on the formulated product as it's sold commercially.

THE CHAIRMAN: Can we ask you again to

try and slow down a little bit. I know it's difficult, but we have to take notes and the court reporter has to take notes as well.

DR. RITTER: I apologize again.

MS. MURPHY: I'm concerned whether I should try turning that up again just a little bit. We can give it a try and see if we have major difficulties. What do you think? I will give it a try.

THE CHAIRMAN: Okay.

MS. MURPHY: I will turn it back down if it doesn't work.

DR. RITTER: Okay. I'm going to do my best to slow down once again and I apologize again.

Sensitization, as I indicated, are a series of studies which are intended to tell us a little bit about the potential of the chemical to induce allergic reactions in individuals. Again these studies, as the others, are carried out with both the active ingredient alone as well as the final product in the way in which it is sold.

I should mention just out of interest that tyically where we see an allergic reaction in association with exposure it is frequently in association with the non-active components of the final

product. It is frequently the solvent or emulsifier or some other additive which may be present in the final product but absent in the active ingredient alone. That is anecdotal and not very useful but interesting.

Delayed neurotoxicity is a very specialized group of studies. These studies are designed to tell us whether or not a chemical has the potential to induce what we refer to it as a delayed neurotoxic effect.

In Canada these studies are required specifically in the group of chemicals that we refer to as the organophosphorous chemical. Historically these chemicals are insecticides and with particular reference to the forestry spray programs these chemicals have often found their way into use in forestry insecticide programs, most notably perhaps in New Brunswick historically in Canada. These studies, as I mentioned, are specifically part of this group of chemistry.

MR. MARTEL: Is there a required -- when you are looking at that, do you look at the time in which it might appear; in other words, the latency period?

DR. RITTER: I think the best way to answer that is perhaps if I just took a moment to

describe very briefly the protocol for this study.

This study is done in chickens and it's done in chickens because chickens have a nervous system which is not unlike our own and is rather susceptible to damage.

The study typically involves pre-treatment of the test animals with an agent which is designed to protect them from death following exposure to relatively high doses of these chemicals. So these animals are pre-treated with atropine which will protect against death from these agents. They are then exposed and then following a period of time maybe re-exposed once again which is why the study is often referred to as delayed.

There is a number of variations on this protocol. The study involves examining these animals both physically for physical symptoms and signs of toxicity as well as histologically; that is, selected areas of the nervous system are dissected out and examined microscopically for damage to the nervous tissue.

So in answer to your question yes and yes. The study protocol involves optimizing the opportunity for the effect to express itself both in terms of physical trauma as well as histologic evidence

which may not necessarily be apparent on physical examination.

The next series of studies that we require are what we refer to as the short-term studies and some might refer to them as sub-chronic, others might use the term sub-acute but they are all intended to impart the same sort of time frame.

The first study which we require is the 90-day oral study and this is conducted in at least two species. In Canada the most frequent species in which these studies are done are the rat and the dog.

These studies are really intended to serve two purposes. The first is that the study provides useful information on the non-acute; that is, exposures which may occur more frequently than once but less than a lifetime. As a reference point in the rat, for example, lifetime is considered to be approximately two years, about 24 months, so that a 90-day study would represent roughly one eighth of the anticipated lifespan of the test animal.

These studies incidentally are carried out in two species to minimize the likelihood that any one species is providing incorrect information. I would also ask you to note that where they are conducted in two species typically one of the species

is a non-rodent and that is again designed to minimize the opportunity that any one species provides erroneous information. This is particularly for applications involving pesticides which may be applied to food.

This is often followed, in Canada is always followed by what we call a 12-month oral dog study and, as the name implies, this is involves dietary administration of the test material to a group of dogs for a period of 12 months. And again, while this is not a lifetime study, it is a study which is intended to provide useful information on the non-acute continuous dietary exposure to the chemical in question.

We may and certainly have in the past on occasion requested non-acute or 90-day dermal or inhalation studies on a given active ingredient or a given product. These studies may be required if, in our view, the product represents a unique opportunity for repeated dermal contact and where, in our view, that dermal contact may represent the most significant route of entry and the most significant risk.

Similarly we may also require in addition to or instead of that dermal study that a long-term or a non-acute study be conducted by the inhalation route for exactly the same reason. If we feel that

inhalation will constitute the major route of exposure and that this may represent a significant risk, we may ask that these studies be conducted by the inhalation route as well.

Again there is a variety of additional neurotoxicity studies that we may require for organophosphorous chemicals such as the neurotoxic esterase and others which we will require if the initial studies on neurotoxicity indicate any positive result.

The last series of toxicological studies that we require in support of an application are by far and away the most complex and the most expensive. I'm going to give you some dollar figures just to give you a sense of the kind of order that we are talking about over here. The two most complicated studies I suppose that we require are what we refer to as chronic feeding and oncogenicity and in a sense these studies are very similar.

In both cases these studies involve dietary administration for at least 90 per cent of the anticipated lifespan of the test animal, dietary administration for at least 90 per cent of the anticipated lifespan of the animal with doses which should be as high as is possible from a practical point

of view; that is, the highest dose administered in these studies should be sufficiently high to induce minimal signs of toxicity. And frequently when these studies do not achieve that high dose, these studies at the end of the day may be rejected as not having satisfied the objective of the overall protocol.

I mention that because over the years there has been concern and controversy when chemicals such as cyclamates which you may remember a number of years ago were the subject of some poking of fun because there were some who argued that in order for you and I to be exposed to the kinds of doses that these rats got we would have to consume 50,000 cans of diet pop a day.

I should emphasize that these studies are not intended to replicate the human anticipated exposure, not intended to replicate human exposure. They are intended to optimize the opportunity for an event to occur and, consequently, the dosing schedule is selected on such a basis so as to provide as much chemical as is possible from a practical point of view to these animals for the longest possible duration. Consequently, we selected the 90 per cent lifespan and the sub-maximal toxic dose for administration to these animals.

The primary difference between these two studies -- some of you with some basis in Latin may recognize the term oncogenicity, both of these studies are designed to look at tumors, the ability of a chemical to induce cancer. The primary difference between them is the chronic feeding study does more than just that. While it includes a count of tumors at the end of the exercise, it also includes a rather thorough examination of a variety of other parameters such as the effect of the chemical on a variety of organ systems; liver and lung, so on and so forth. It will look at haematology, effects that the chemical may have on any number of blood parameters, effect on biochemistry, urine analysis, so on and so forth.

Oncogenicity studies tend to be rather selective in that they tend to look only at the induction of tumors in association with exposure to the chemical.

You see the rats here repeated because indeed these studies are often combined; that is, the oncogenicity and chronic feeding study is done in the rat and the oncogenicity study alone is done in the mouse.

The rat incidentally is selected as the species for the chronic feeding study because a rat is

much larger, has a larger volume of blood, is more amenable to the kinds of investigations that are done in these studies.

The next study that we require is what we call pharmacokinetics and these are a series of studies that are designed to tell us what happens to the chemical once exposure has taken place; that is, how is it absorbed, how do we get rid of it, if we retain it where does it go, what are its metabolites once it gets in, is it changed to something more toxic or less toxic on absorption, so on and so forth. How long is it retained if it's retained. All of these sorts of questions relating to metabolism and pharmacology are generally addressed in the pharmacokinetic studies.

I have indicated here by appropriate routes because, as I mentioned earlier on, our primary considerations here today are with worker and bystander exposure. Consequently, it may not necessarily be appropriate to conduct these studies following oral administration which is a convention and we have frequently, for example, required that these studies be conducted following dermal exposure to the chemical which is where we normally see most of the exposure to take place in an occupational study.

Mutagenicity is again another Latin

derivative and it refers to the capacity of the chemical to induce heritable change, refers to --

MS. MURPHY: Q. I'm sorry, produce what?

DR. RITTER: A. Heritable change. It really refers to the capacity of the chemical to interact with the genes, with the genetic material of the cell and to in some way alter that genetic material.

Teratology looks at the capacity of the chemical to induce birth defects and, like some of the other studies, we require that this study in particular be conducted in at least two species, one of which must be a non-rodent.

Multi-generation reproduction study is a study which looks at the capacity of the chemical to induce reproductive disorders other than birth defects because those are, of course, addressed in the teratology studies.

And by way of example we mean by reproductive disorders, this study will look at things such as spontaneous abortion rates, resorption rates, the number of live births, the gestational period, has the chemical affected the gestational period in the test species and so on and so forth.

MRS. KOVEN: Would you explain what

resorption means?

DR. RITTER: Pregnancies are not always successful. There is frequently, in fact much more frequently than I think most people realize, the capacity to spontaneously resorb a fertilized egg both in the human situation and experimentally for many, many reasons which I won't go into.

One of the things that this study looks at are these resorption sites; in other words, of the number of potential pregnancies, how many actually develop into full-term pregnancy.

One tends to use the word -- the term spontaneous abortion for aberrant effects which take place much later in the gestational cycle, whereas the resorption that I'm referring totends to take place very early on following fertilization, but this study has within its protocol the ability to detect both of those changes.

MRS. KOVEN: Excuse me, where do you put birth weight on this --

DR. RITTER: Birth weights. Birth weights are actually measured in both but because teratology studies by convention now -- I don't mean to belabour the answer, but I'm going to have to.

Animals, as many of you may know,

particularly rodents tend to consume their young. Now, many years ago teratology studies usually involved delivery of the young following full-term pregnancy. The difficulty with that was that if you were not there at the exact moment of birth the results could have been somewhat affected. You could come into an examination and find that there were only half as many more than you expected, there may have been all of them to start with and you may have missed some of them.

What is done now by convention in teratology studies is these animals are delivered typically about 24 hours by caesarean section prior to a delivery when it can be expected to take place. So that birth measurements are not really all that useful any longer in the teratology protocol.

Most of the birth measurements that you are referring to, and I think you are referring to, are now taken in the multi-generation study because, as the name implies, this is multi-generation, each generation becomes the parent of the subsequent generation. So if you think about it there is actually a large number of parameters that are being tested within this protocol.

For example, if there is an effect which is associated with the presence of the toxic chemical in breast milk, that chemical will find its way into

this lactating process in the multi-generation study, may affect subsequent generations whereas it did not affect the first generation. And we see that from time to time, where there is a toxic effect expressed in the second generation which was not present in the first generation. Often explainable on the basis of the introduction of this chemical in the lactation where it would not have been present in the initial generation that was tested, so on and so forth.

The last group of studies are the worker exposure studies and we were the first country in the world to formally require that worker exposure studies be conducted and the first country in the world to formally require them routinely in support of every product registration which we now look at.

And while the toxicology that I have described is pretty much standard around the world with most agencies that have toxicology data requirements, the worker exposure studies are somewhat unique to Canada. And although the Environmental Protection Agency in the United States now requires them to some greater or lesser extent, I would like to spend a little bit of time showing you how we do these because, as I say, this is where we have really made our mark internationally.

Once the toxicological studies have been completed one can actually determine from that what is an acceptable use. By way of an example - and if you would just imagine because it did not come out in the graphics - there should be a line right through there, so that this equation has a numerator and a denominator.

From the toxicological studies that I have described for you one can determine what we refer to here as the NOEL and that refers to the no observed effect level. In other words, it is the dose level in the study which did not produce a toxic response.

And if you decide in advance what is an appropriate safety factor between animals and man; that is, let's say we were talking of birth defects by way of example, and we decided that we would like a thousand fold difference between the dose that you and I might be exposed to as compared to the dose that the animals were exposed to, we can determine in advance that if we were looking at a teratology study we will require a safety factor of one thousand. We can take the lowest dose which did not produce an adverse effect in that study, divide it by the appropriate safety factor - which in this case we said might be a thousand - and that would generate a number which we

call the acceptable daily intake.

In other words, the dose which did not produce an effect divided by the safety factor is clearly the dose which we would not consider to be potentially toxic to humans.

If one is talking about exposure through the food route one can go out and actually measure residue. After typical agricultural application, one can actually determine what the residue content of a basket of food is and, in that way, one can determine what the theoretical daily intake is of the chemical in question.

Theoretical daily intake incidentally tends to exaggerate what the actual daily intake is and that has been the subject of some investigation by the United States National Academy of Science.

I say it's somewhat exaggerated because a theoretical daily intake makes a number of assumptions which are --

THE REPORTER: Excuse me, Mr. Chairman. I am going to have to ask Dr. Ritter to slow down again.

THE CHAIRMAN: Sorry, the reporter isn't getting it all. Slow down again, please.

DR. RITTER: The theoretical daily intake makes a number of assumptions, many of which we know

are probably not correct and it includes such considerations as: All crop is treated all the time all at maximum residue limits and all food products that we consume have been treated with that chemical all the time.

Now, it is very unlikely that all of those conditions are always operating simultaneously. In actual practice, frequently much of the crop has not been treated, the residue is not present at the maximum limit and we know that from actual surveys that have been done in Canada and world-wide over many, many years. Pesticide residues are rarely at the maximum permitted level by law.

At any rate, that kind of an analysis gives us what we call theoretical daily intake. Now, if you recall how we define the acceptable daily intake, clearly if the amount we are going to be consuming is smaller than the amount we said is acceptable, we have what we would consider to be a safe use for food tolerance.

Again, if I could just repeat that this calculation has built into it an additional safety factor because the theoretical daily intake includes a number of assumptions which we know will rarely, if ever, all be operating at the same time. So that our

calculation of the theoretical daily intake represents a value which is probably much greater or at least of some measure greater than what the actual residue is in food. So that if this theoretical daily intake is the amount we expect to be exposed to through food is less than the amount we said is all right, the use of that product constitutes what we would call a safe use.

We can go through an analogous kind of calculation or what I refer to as worker or bystander exposure.

Again, if you would just imagine a line between NOEL and safety factor, as we indicated earlier, we can determine experimentally from the studies that I have described what is the lowest dose at which no adverse effects were seen. Once again, we refer to that as the no observed effect level.

We can, again as we have discussed, decide a priori what we would consider to be an appropriate safety factor for any given effect that we may be investigating. Once again, that regenerate will be what we call an acceptable daily exposure; the lowest dose which did not produce an effect divided by a safety factor selected for that particular end point gives us what we consider to be an acceptable exposure.

We can then go out and do exposure

studies. We can actually measure typical human exposure during typical use of the chemical and we can do that in an agricultural setting, we can do it in a greenhouse, we can do it in a home, we can do it in a forest, and we have done it actually in all of those settings.

And from those exposure studies we can determine what is the likely maximum exposure that humans will be exposed to during that particular application and like in the food example this would give us what we call the theoretical daily exposure using logic which is very analogous to the one that we just described for food.

If the theoretical daily exposure, if the exposure that we anticipate for applicators during the normal course of their work is less than the level of exposure which we have already judged to be safe, then the use of that chemical in our view would be considered safe.

This model --

THE CHAIRMAN: Excuse me. Does that take into account any cumulative effect of being exposed to the chemical?

DR. RITTER: The cumulative effects are generally investigated in the pharmacology and

metabolism studies that I referred to earlier, so the answer to your question is yes.

I should also add that the nature and use of many of the chemicals which we described are used relatively infrequently; they may be applied once or twice a year; in the case of forestry they may be applied once in 50 years. So that the opportunity for cumulative effects with many of the uses of interest, particularly to this Board, are not frequently plausible.

We can go through a very analogous kind of process for re-evaluation. The process that I described for you refers to new chemicals that are coming into the system today or within the recent past. But of course, as you well know, there are many chemicals that have been on the market for some years and in order to try to capture what we know about these chemicals and to ensure that all registered products in Canada have a database which is analagous to the one that I described for you, we have created a process by which all registered products are re-evaluated on a cyclical basis.

And the kinds of data that we require on cyclical re-evaluation are very similar if in fact, in many instances, not identical to the kinds of data that

I have already described for new products.

Very quickly just to review it for you because I have covered only the toxicology data requirements in the earlier review and, as you know, there are many more data requirements than simply toxicology. Data requirements might be include things like product chemistry, what do we know about the product per se, does the product have the potential to be contaminated with such agents as sulphurdioxins; analytical methods, can we actually analyse for the presence of the chemical in the environment or human tissue or in food; environmental fate - Peter Kingsbury will have more to say about that - health effects, which I have described for you to some length; the animal toxicology, so on and so forth.

There is of course an involvement of the various provincial agencies and other departments for chemicals that have already been registered for some time because we would very much like to benefit from the actual use experience that may have been obtained by use within various jurisdictions of this chemical over the years.

And, finally, once all of this data has been analysed we will, in some cases, identify data gaps or data deficiencies and at that point in time the

petitioner, the registrant, the licensee will be requested to submit this additional information and where necessary to repeat studies which may be old and, in our view, no longer sufficiently contemporary to answer the kind of questions we would normally ask.

In addition to this process for re-evaluation, in the last four or five years we have carried out many what I will refer to as ad hoc re-evaluations. They are ad hoc because they do not comply with the regulations, the formal regulations and law as far as re-evaluation is concerned and they are ad hoc because they are driven primarily by one concern. And I suppose the most notable example that comes to mind for me of an ad hoc re-evaluation was the case of alachlor and some of you may or may not be familiar with the case of alachlor.

Alachlor was a corn and soyabean herbicide which had been registered in Canada since about 1969 and in the early 80s, around 1981 or 1982, we became quite interested in a series of replacement studies, such as the ones that I am referring to over here, we became quite interested in the series of replacement studies which had been submitted in support of the continuing registration of alachlor.

On review of those additional studies, in

our view, the product constituted an unacceptable risk which ultimately lead to the cancellation of this product in Canada in 1985 which, in turn, was followed by a very long and protracted legal battle ultimately culminating by decision of Supreme Court of Canada in its refusal to grant leave to appeal to Monsanto on that matter.

That just ended within the last month or two, so it was a process that took almost four years to resolve completely. At this time that chemical is not on the market in Canada. I mention that only because it was not a formal re-evaluation, it was in fact an ad hoc re-evaluation.

And we have perhaps carried out maybe 25 of those over the last four or five years, so that our program of looking at the older registered chemicals that have been used in Canada for some time may go through either this formal re-evaluation process that I have described for you - and there is a number of examples of this - or it may go through the process of ad hoc re-evaluations and there is a rather substantial number of examples of that.

MRS. KOVEN: Excuse me, did you just say that the informal -- the ad hoc process of re-evaluations are 25 compounds or 25 substances that

have gone through that process?

DR. RITTER: I perhaps shouldn't quote numbers, but I would say that they are probably something of that order that have taken place in the last four to six years.

MRS. KOVEN: In the formal re-evaluation?

DR. RITTER: In a formal re-evaluation, the chlorophenoxy herbicides are presently in formal re-evaluation and that constitutes several products there were probably five, six, seven, eight, somewhere of that order. In addition, the fumigants are in formal re-evaluation and, again, that represents a family of about five products.

And formal re-evaluations tend to be done in clusters because what we want to avoid doing is to eliminate the use of one chemical only to increase the use of another about which we know a great deal less. So that they tend to be done in clusters on chemicals that have similar use patterns and, in addition, there has been a formal re-evaluation for atrazine which has been announced in the very recent past.

MRS. KOVEN: What did you mean by the cyclical data for the formal re-evaluation?

DR. RITTER: There is a program in effect which requires this re-evaluation to take place on a

cycle. There are, as I mentioned to you, about 450 active ingredients representing about 5,000 products or so, and in order to come up with a logic which would dictate the order in which these things were done, we created a priority ranking scheme which included considerations such as age of the data, the extent of use, the likely exposure during use, and from the interests of a variety of different departments, not only our interest, but Environment Canada, Fisheries and Oceans, so on and so forth, and that priority-setting process created a cycle by which these chemicals would be re-evaluated. The cycle does not necessarily refer to time, but rather the process.

MRS. KOVEN: Can you give me some idea of this process of re-evaluation and its size in comparison to the registration of new products?

DR. RITTER: The registration of new products is -- comparison of size to the formal re-evaluation program or to the overall effort on re-evaluation?

MRS. KOVEN: Both the ad hoc and the formal re-evaluation, comparing that workload to the size of what goes on with registration of new substances.

DR. RITTER: I would say that in

comparison to the overall re-evaluation effort, both formal and ad hoc, the activity in terms of effort is probably close to equally divided between new products and re-evaluation.

In terms of formal re-evaluation, I would say that new products certainly get more attention.

MS. MURPHY: Q. And just before you go on, you have explained the information that's required on an original registration of the product?

DR. RITTER: A. That's correct.

Q. And you have explained information that's required here at what you called a formal re-evaluation of a registered product?

A. That's correct.

Q. And you've talked about the kinds of things that happen in ad hoc re-evaluation?

A. Yes.

Q. And perhaps you could let us know, and let me know if I am right, but is there any dataset or any information required on a product that's already registered if it's going to be used in a new way?

A. Yes, that was the last point that I had intended to cover here.

There is a third category outside of the registration of new products and the re-evaluation of

older ones which comes up on a day-to-day basis as well and; that is, during the course of life of any given product there is frequently applications for expansion of use of that particular product.

In other words, a product may be introduced initially to get rid of weeds in the production of corn and shortly after that introduction the company involved may request an expansion of that original licence to include application to soyabeans, and a year or two down the road may request yet another expansion to include application to turf and so on and so forth.

Our process of looking at these requests for expansion of use involves a re-examination of the available data every time we encounter an application for expansion which, in our view, constitutes an opportunity for increased exposure.

If I can just put that another way. If the application for expansion merely involves the inclusion of one more pest species on the label but will not include any additional applications or any additional crops, we will probably not be very interested in it because that expansion; that is, if the label already says - and the entomologist will have to bear with me because I know very little about bugs -

if that initial application was to kill grasshoppers on wheat and the expanded application is to kill mosquitoes on wheat which occur at exactly the same time, we would likely not wish to become involved because that expansion in the label will not involve any additional use of chemical for any additional period of time.

On the other hand, if the initial licence was to treat a particular weed in the production of wheat and the subsequent application is to treat a weed in the production of corn, we will most certainly re-examine the available data because not only will those -- will that proposed expansion involve additional application of the chemical, it will involve a whole new set of people because the farmers that are producing wheat in western Canada are not the farmers that are producing corn in central Canada.

On re-examination, if in our view the available data is not sufficient to support a contemporary registration, then historically we have not been likely to agree with it, and at that time we may frequently require submission of additional studies to make the available data somewhat more contemporary and reflect current standards.

MS. MURPHY: Q. Dr. Campbell was talking

about use patterns when he was giving his evidence. Are the different things you are talking about, the different kinds of uses of these products, is that related in any way to that description of use patterns?

DR. RITTER: A. Yes, it is -- different people use different terms to describe it, but certainly use patterns is the correct way to describe it. We tend to refer to it as use patterns.

If an application came in for an insecticide - perhaps a more relevant example - to treat spruce budworm in eastern Canada for a product that may have already been registered in Canada for 15 years, we would not agree to such an application unless in our view the available data reflected the kinds of contemporary data requirements which we have in place now.

Q. That's because you would be considering that a new use pattern of the same product?

A. Well, for all -- we tend to consider it really as a new product for all practical purposes, even though it is already registered. Where the new use in our view represents significant opportunity for new exposure, we tend to see it as a new product for all practical purposes.

And I should say as a matter of interest

that we have been criticized in some circles for having done that because we have been accused of carrying out re-evaluation in effect every time an expansion of use request comes in. And I must say quite candidly, I think to a large measure that's true of what we have been doing.

I would like to spend a few moments describing the exposure study which I briefly touched on because I mentioned this is where we have made our mark.

MS. MURPHY: Just before you do. For the purposes of the record, this is Exhibit 710 that Dr. Ritter is looking at now and I suspect he will be going through that exhibit looking at each photograph and giving it by number, 1 to 5, and perhaps with each one you can just start by giving us a name or an identifying description of the photograph.

DR. RITTER: All right. Let's call this the base. When we do these exposure studies, as I have indicated, we now require these studies of every petitioner, every registrant who makes an application for a new pesticide product in Canada. But, in addition to that, we have carried out a number of these studies on our own, both to help us understand the complexities of them and to help us understand the

kinds of questions we should be asking of those that we regulate when we ask them to do these studies. And in this base slide what I am showing you is the kind of clothing that we would generally provide to cooperators in our study.

Now, in these kinds of studies what we will do is to approach a number of people who may be using this chemical anywhere; that is, I tend not to think of these studies as human experimentation because we are, generally speaking, approaching people who are already making use of this chemical and, in most instances, we are doing little more than asking them to go about their usual business, allow us to carry out an examination, perhaps donate some blood and, more often than not, donate a week's supply of urine.

MS. MURPHY: Q. So this one could be called the clothing used in exposure studies?

DR. RITTER: A. Well, we are going to have more clothing. Why don't we call this the base clothing.

Q. This is one with all of his clothes on?

A. That's right. And we are going to get to some that have a little less clothing on.

This is just a cotton outfit and we

supply this routinely because what we want to ensure is that people coming into the study are not bringing their old clothing which may already be contaminated with a variety of pesticides, because ultimately we are going to extract this clothing.

So this set of cotton overalls or two pieces are supplied to everybody who is participating in our study.

MRS. KOVEN: Excuse me, may I ask when the word cooperators came to mean study subjects?

DR. RITTER: What it means in the study subject?

MRS. KOVEN: When did that term come into use?

DR. RITTER: I don't know. This is informed consent. Honest. In addition to the overalls that you see, we will then take a number of patches and I should perhaps interject and say that there are a number of ways in which human exposure studies can be done and, in the interest of expediency, I'm only going to present one because I'm using this really as a generic example rather than as a specific case.

So I'm going to describe one patch method and I will quickly add that there are other methods which I am not describing but with which we are as

familiar as we are with this.

In this patch method, in addition to that clothing what we will then do is to affix a series of patches as you can see over here (indicating) to various body regions, in addition to a personal air pump, and I'm going to show you a close-up of that air pump in a moment.

What these patches allow us to do is to get an estimate of the amount of chemical that may fall on various body regions and then through a series of mathematical manoeuvres, which I'm going to tell you a little bit about in a moment, that can then provide us with an estimate of the amount of chemical that may impact on different body parts and, consequently, where should we concentrate our effort in an attempt to reduce exposure to the chemical.

We have, for example, through studies of this kind discovered over the last 8 to 10 years that about 80 per cent of pesticide exposure in mixers and loaders occurs to the hands. So that if one can find some way to reduce or even eliminate exposure to the hands, one has effectively eliminated 80 per cent of pesticide exposure during the mixing and loading phase of pesticide application.

MS. MURPHY: Q. So that one -- could we

call that one patches and air pump used in some exposure studies?

DR. RITTER: A. Yes.

I would like to show you that air pump a little closer. This is a personal air monitoring device and it is driven by a nickel cadmium battery which, in our hands, runs about 8 hours or so.

What we do is we attach a little piece of tygon tubing to this thing and at the end of this is a glass tube with a charcoal trap and this is then placed around the breathing zone, particularly around the neck of the cooperator.

What this device will do is it will suck air through this opening over here (indicating) for the period of application, so that at the end of the day we can take not only the patches as well as the clothing back to the laboratory and extract those, we can take this carbon filter back to the laboratory, extract that and, from that, we can then estimate the amount of exposure that has taken place not only dermally but through the inhalation route as well.

We know of course from first principles that oral exposure is not likely to be a significant route in workers, so we tend to be less concerned with that route. We are, nevertheless, concerned with the

potential for inhalation exposure, consequently, monitor the air around the breathing zone for a typical day's work and we also are concerned with the amount of chemical that may fall on different body parts.

Q. So that is a personal air monitoring device?

A. Yes.

And the next one we are going to call slides. I don't know if there is any people interested in photography here today, but those patches which I've shown you - I think we will call this patches perhaps - are a little more than 2 by 2 slide mounts into which we have placed a piece of surgical gauze. The back of this has a piece of plastic strip behind it so that the chemical that will fall on the gauze will then be prevented from going straight through by the plastic.

Similarly, we have created a similar kind of an arrangement that can be worn around ankles or wrists or other areas in which the use of this kind of a device is handier or can even be more reliable than this kind of device.

We will call this centile man. This centile man is from the National Aviation Administration in the United States. From NASA and the mathematical calculation that I referred to a moment

ago is based on centile man.

What this tells us is the proportion that various body regions represent of the total. So that we will know from this kind of a calculation, for example, that the hands, while representing only 5.6 per cent of the available body surface for dermal exposure, may represent 80 per cent of the overall exposure to a given pesticide.

And this kind of centile man together with the exposure study that I have described has been very, very useful to us and to those that we regulate in the last 8 or 10 years in determining; first, where the bulk of exposure may take place and; secondly, what would be the most effective means to reduce that exposure.

And as you will note perhaps from my CV over the last three or four years, we have put quite a bit of effort in to determining the role of protective clothing, what protective clothing is most effective for retarding penetration of what kinds of chemical, the effect of the non-active ingredient in the formulation on retarding that uptake, and so on and so on.

Finally, once these exposure studies have been done -- the exposure study that I have described

for you, as I indicated, while it's an example it's very representative of the kind of exposure studies that are typically done in Canada and elsewhere. As I have indicated to you, we require that those exposure studies be done now in support of every new product application, as well as in support of every major product expansion of the type that we just discussed a moment ago.

We would not be likely to agree to a product expansion which involves significant opportunity for increased exposure in the absence of such an exposure study directly related to that expanded use request.

Once the exposure data has been submitted and the toxicology studies have been reviewed, we are in a position to estimate what the likely risk is in association with the use of that chemical. And in a sense this is just another version of what you have already seen earlier and I would like to just quickly review the context of this both for food exposure and for worker exposure.

As I mentioned to you earlier, toxicology studies allow us to determine what is the lowest dose level at which no adverse effects were seen in the given study. And as we discussed, we can in advance

determine what is, in our view, an appropriate safety factor, or perhaps to put it in another way, an uncertainty factor. If we were testing these chemicals in man there would be no need to determine the safety factor and frequently when therapeutic drugs are tested, there is no provision for a safety factor because the test species is also the target species.

Because these chemicals are being tested in rodents, small animals we always allow consideration for the possibility that man is significantly more sensitive than the test species and that is the basis for these safety factors. That will give us again what we consider an acceptable daily intake.

We know that the studies on which this no observed effect level are based typically have been carried out through the oral route of exposure, but we also know that in the case of worker exposure, exposure is often through the dermal route; infrequently, but sometimes through the inhalation route and, consequently, our safety factor must take account of those differences in potential routes of exposure as well.

Ultimately we know that in the case of food at least that if the theoretical daily intake, the amount that you and I would typically be exposed to

through consumption of food every day is less than what we have already considered to be acceptable, that represents a safe use.

A complication in trying to carry out exactly the same calculation for workers is as I mentioned that, whereas most of these studies are conducted using the oral route of exposure in animals, typically worker exposure by far and away the majority of the time is through the dermal route and infrequently through the inhalation route. Consequently, in carrying out these safety factor determinations we have made allowances for what that difference in absorption may represent because of the two different routes of exposure.

Once again, if in our view the theoretical daily exposure which we have determined experimentally from these human exposure studies is less than what we have already considered to be acceptable, then in our view the use of that chemical should be safe.

Thank you.

MS. MURPHY: I have no further questions at this time of Dr. Ritter, unless the Board has any. It might be a good time just to take a break.

THE CHAIRMAN: Okay. We will take 15

minutes at this time.

We are planning perhaps to sit until five or 5:15, in around that period where it's convenient to break.

Thank you.

---Recess taken at 4:05 p.m.

---Upon resuming at 4:35 p.m.

THE CHAIRMAN: Thank you.

MS. MURPHY: Mr. Chairman, I thought I would just first of all point out for the assistance of everyone that the basic information that was just presented without, of course, the examples and so forth can be found in the paper written by Dr. Ritter and Mr. Ormrod. That document is in the statement of evidence for Panel 12. That is Exhibit 403A -- 603A, I believe.

MR. CASTRILLI: 603.

MS. MURPHY: 603A.

MR. CASTRILLI: Yes.

MS. MURPHY: That is Exhibit 603A and the paper commences on page 80 of that document. And I had a couple of minor questions that I did have for Dr. Ritter before going to Mr. Kingsbury.

I would suggest, with your indulgence, if I could do that and then perhaps suggest that we just break and come back to Mr. Kingsbury perhaps early

tomorrow morning.

THE CHAIRMAN: Very well.

MS. MURPHY: Fine.

Q. Dr. Ritter, I just have a couple of things I wonder if you could help me with. First of all, I understood early in the presentation that you were explaining that the data requirements are collected pre-market; that is, that this information must be collected before products are registered for use and then, subsequently, when you were discussing the exposure information, you were explaining that some of the people who are involved in that were already involved in using these products.

Can you explain that for me, please?

DR. RITTER: A. Yes. The pre-market statement that I made referred to the toxicology data. All of the toxicology studies which I described in Canada must be submitted, evaluated and found to be acceptable before the product is registered for general broad scale use.

Exposure studies are done in two ways; they are done in a generic context -- the ones that we carry out are done in a generic context and they will often, if not always, make use of specific products.

Q. That are already registered?

A. That's right.

Q. And so when you are explaining when they are done in a generic context, I'm not entirely clear what you mean.

A. The studies that we conduct are conducted for the purpose of learning something about the nature of the study rather than learning something about exposure to a particular chemical. We have no interest in exposure to a particular chemical. From our vantage point, in the case of new chemicals, exposure studies are almost always done during the first year of experimental use after all of the toxicology data has been submitted and evaluated.

Put it another way, we would not likely agree to an exposure trial on an experimental use basis if, in our view, the toxicology data did not reflect in all likelihood the lack of a hazard in association with that experimental trial.

THE CHAIRMAN: Dr. Ritter, because you raised it and my information is thirdhand or hearsay and probably not that reliable, but I want to ask these questions because of the context in which you raised it, and that was the alachlor ad hoc review that you carried out.

As I understood that, the majority of the

testing was done in the U.S. and the product received registration in the U.S. and subsequently in Canada.

One question is: Were independent tests conducted in Canada on that product, or did the Canadian authorities essentially rely on the results from the American tests because, as I further understand it, subsequently the lab that conducted some of the testing in the U.S. was found to have misrepresented some of the results leading to the U.S. authorities cancelling the registration which then left Canada in the position of deciding what they were going to do with the fact that the product was registered here but not registered in the U.S.

And, as a result of that, the independent inquiry before the Alachlor Review Board was set up and went through to what you indicate is the conclusion, the Supreme Court of Canada's refusal for leave to appeal.

But I guess my question is: When products are registered in Canada for the first time, are independent tests conducted by the Canadian authorities which are different and in addition to any other tests which have been conducted by some other jurisdiction?

DR. RITTER: I would like to clarify some

of the things you have said, if I may, about the alachlor case.

THE CHAIRMAN: And what I'm saying may be totally inaccurate, it's basically what I have read in newspapers, et cetera.

DR. RITTER: It is inaccurate. I would like to correct it. As a matter of record, alachlor is not cancelled in the United States and never has been. It is registered today in the U.S. and has not been registered in Canada since 1985.

We didn't follow the the Americans, we led them. We were the first country in the world to cancel use of alachlor. There are a number of jurisdictions that have since followed suit but, to the best of my knowledge, Canada was the forerunner to remove alachlor from the market and today, 1989, it is still registered in the United States.

The studies to which you refer initially were conducted on behalf of Monsanto, the data owners in the case of alachlor, by an organization called Industrial Bio Test which came to be known as IBT and in the mid-70s IBT, situated outside of Chicago, had conducted many, many, many toxicologic studies on behalf of many drug companies and pesticide companies.

In the latter 1970s it became evident

that there were a large proportion of studies conducted by IBT which had been improperly conducted. In some cases, it appeared that the data may have been randomly generated in these studies. Alachlor was one of those chemicals and, on examination, we requested rather independently from the Americans, although through a joint effort, that the various studies in question be repeated.

It was the re-evaluation of those new studies that were submitted starting about 1981 or so that eventually led us to the conclusion that, in our view, alachlor could not be used safely and subsequently gave rise to the cancellation in February of 1985. That was the situation with alachlor.

Specifically your question as to the independence of testing, I want to make sure that you and I use that phrase in the same context. All of the studies which I have described are not conducted by ourselves or the Americans or any other jurisdiction, for that matter the testing requirement is imposed on the petitioner and all of the studies are done either by or on behalf of the petitioner and submitted independently to regulatory agencies around the world for evaluation and review.

So if I can take your question to mean:

answer is yes. We have never, to the best of my knowledge, ever based a decision on an American review.

THE CHAIRMAN: And when you evaluate studies which have been carried out by other labs in other countries or in Canada, et cetera, and you are evaluating results, can you come to the conclusion that those results are valid having not done any independent testing of your own.

In other words, you are accepting certain numbers that come forward as a result of other labs conducting the testing where you were not present when that testing was carried out. So are you not accepting at face value some of the raw data?

DR. RITTER: We are accepting all of the data at face value. There are a number of checks and balances that are in place to try to minimize or eliminate the possibility that the Industrial Bio Test situation could again repeat itself.

For example, in the early 1980s the Governments of Canada and the United States implemented something that will be referred to as GLP or Government Laboratory Practice which is a tracking system from the planning stage of the study through its execution and final submission to regulatory agencies and the auditing and bookkeeping which GLP requires and with

which studies must comply for submission, is designed to minimize the opportunity for that kind of thing to take place. In addition, there are world-wide audits of laboratories which carry out studies on behalf of both drug and pesticide petitioners.

I should add that the studies that we receive are not necessarily American, they are frequently European. Many of the companies that we deal with are drug-based companies Cibe-Geigy, Dow Chemical and so on and some for which are headquartered frequently in Europe, so we tend to look at studies not having a nationality.

The likelihood of fraud in these studies is also reduced by the fact that studies are simultaneously submitted to many regulatory agencies worldwide. I tend to look at the IBT situation really as one of our finest hours rather than as a weakness in the system.

I think, as many regard it, it's true enough that IBT carried out these, for lack of a better term, fraudulent practices but I think if you recognize perhaps that it was the regulatory agencies both in Canada and United States that recognized that these improper practices were going on really within a relatively short period of time from when they started,

so I don't know if we can be held accountable for the fraud, per se, but I think it's a credit to both our system and to the Americans that the fraud became evident very soon after it had been initiated.

THE CHAIRMAN: Okay, thank you.

MR. MARTEL: Could I ask a question. What type of testing do you do on substances such as, let's say -- or do you do any, for example, uranium or asbestos where in fact there has been some serious problems in Canada.

And I ask that in relationship to other products that are on the market and whether they are being pre-market tested, because my information, like the Chairman's, is that some of this stuff doesn't get pre-market tested.

DR. RITTER: The short answer is I don't know. My interest in specialities over the last 10 or 12 years are really related to the regulation of pesticides.

There is no question that in Canada the registration of pesticides involves the pre-market evaluation of toxicologic studies. That is most certainly the case.

MR. MARTEL: You are not aware of other chemicals that are coming on to the market annually?

DR. RITTER: No, I'm not.

MR. MARTEL: Can I ask one other question. How do you determine the safety factor? In your formula you have the safety factor. How is that arrived at?

DR. RITTER: Largely through experience in judgment and element of convention. If the minimal safety factor that one tends to think of is the smallest safety factor, one tends to impose what we call a ten by ten matrix and that allows for a factor of tenfold for interspecies and a factor of tenfold for intraspecies.

That is a calculation that assumes that there can be as much as a tenfold difference between two rats and it further assumes that there can be another tenfold difference between rats and men.

So if we were looking at a toxicologic effect which we considered to be relatively trivial, the minimum safety factor that we would impose would be a hundred and then it would go up from there.

If we go to the extreme case, for example, those agencies that apply safety factors to carcinogens have often applied safety factors of the order of 5,000 fold.

So to give you some point of reference,

one often sees safety factors that range from somewhere around a hundredfold; whereas, as I say, those safety factors of a hundredfold would be applied to effects which we really don't consider to be worthy of a safety factor at all. That's about the minimum safety factor that we would apply, right up to about 5,000 fold for the most serious consequences that we encounter.

MS. MURPHY: Q. I had one last question, if you can help me with this one, because -- perhaps it is a matter of semantics.

But you were talking about the NOEL, no observable effect level, and you were explaining that that level was the lowest dose that did not show a toxic effect, and in considering it, isn't it possible also to describe that as being the highest dose that doesn't show a toxic effect? Can you explain --

DR. RITTER: A. Yes, it is, it is both and it is a matter of semantics. It is sort of like when we look at the results of a cancer trial we consider the absence of an adverse effect to be a negative result; that is, if no effect is demonstrated in the study we consider that study to be negative. Whereas the term negative, I think to most people, implies that there was an adverse effect that was noted to us. A positive study has an adverse effect.

What I meant by that phrase is the no observed effect level, if one looks at a study for example that has three dose levels and one control untreated group, the dose level which I am referring to as the no observed effect level might be that first dose if the subsequent two have an effect.

I don't know if it would be easier if I did that graphically. In a three-dose study, if the top two doses have an effect and the bottom one does not, the NOEL would be that bottom dose. Now, depending on your point of view, that is either the lowest dose or the highest dose.

Just very quickly without belabouring it, if we have a study in which we have a control group and a --

Q. Just hold on.

A. If we have a study in which we have a control group, and this could be any study at all, it doesn't really make a difference what the end point is.

MS. CRONK: I'm sorry, Mr. Chairman, both to you and the panel and the witness. I wonder if I could ask you, Dr. Ritter, if the Board doesn't object to move that podium over so that some of us can follow with you.

DR. RITTER: I'll tell you what I'll do,

if we have a blank transparency I can do it on there. Would that be easier? I don't expect this is going to take that long. If we have a study --

THE CHAIRMAN: Hold it. We need the microphone again.

MS. MURPHY: I didn't really mean to start this.

DR. RITTER: This is difficult to explain in words, it is easier to explain graphically.

If we have a study, typically it might involve three doses and an untreated control group and the untreated control group is included so that we can get some sort of sense of what might be occurring spontaneously in the absence of any treatment at all.

So in a typical study we would have the control group which receives no treatment at all, zero treatment, and then we might have another group that receives 10 units of the given chemical and another group that might receive 50 units, and a third group that might receive 100 units of the chemical in question. And the control group in this particular study, if we were testing 50 animals per dose per sex, the control group in this particular study might have a spontaneous rate of occurrence of this event of about 2 per cent, let's say, or 1 in 50.

The 10 group, if it were unaffected by the treatment at this level, one would expect would have a similar incidence of the particular effect that we are studying, so it too would have an incidence of 1 per cent or 1 in 50.

The next group might have 20 out of 50 occurring and the final group might have 40 out of 50 occurring.

The no observed effect level in this study would be this group here (indicating), the group which had a frequency of events comparable to the frequency occurring in the control group; the group that did not receive any treatment at all.

Depending on one's semantics, this is either the lowest dose which didn't produce the effect or the highest dose tested which failed to produce that adverse effect, but that's the group that I'm referring to.

THE CHAIRMAN: And when you do that and you take a sample of animals or rodents or whatever you are testing on, what effect does the numbers that are affected have with respect to whether or not that's going to be an effect that you are going to recognize?

In other words, if it occurs in one test specimen, is that enough; or are you going to say that,

you know, this is an aberration for this one and we have done it a few times and it only occurred once and that's enough?

DR. RITTER: The answer is yes and no. There have been instances where a frequency of one is sufficient to convince us that it is truly an effect which is relateable to the treatment. There is a variety of computations and permutations that one goes through to try to answer that question.

For example, one of the things that one may look at is what we refer to as a historical control group. The control which I illustrated there would be the concurrent control group, it is the group -- the untreated group which is run simutaneously with the treated animals. And all things being equal, one would expect that that untreated group would react in exactly the same way as the treated animals except for the treatment.

But there are, of course, circumstances that may sometimes serve to either depress the normal background rate of the event or to elevate it, and to try to examine that possibility one can look at a historical control group.

If, for example, the laboratory in question who has done, let's say, the cancer study, if

we go to Hazleton Laboratories, by way of example, a big contract laboratory, they may at any time be running 50 cancer studies.

So over the course of the last 10 years they may have data from 3- or 400 hundred cancer studies and we might look at the frequency with which that event has occurred over the last 3- or 400 untreated control studies, and that gives us a sense of whether or not the concurrent control is falling within the kind of range that we would expect.

Although we place some importance on statistical interpretation, it is not the definitive answer. It is impossible to achieve a statistically significant result for relatively rare events in relatively small group sizes such as 50. So one need not necessarily achieve a statistically significant result to consider it biologically relevant.

I can think of some tumor events that we have seen over the years where, in examining the records maintained by the National Cancer Institute, these events are known to occur with a frequency of less than 1 in 5,000; that is, in 5,000 untreated controls that have been examined it may have only occurred once and if we see that event occur in a group size of 50, we would be inclined to think that it is

relateable to treatment, even though the 1 in 50 may still be a statistical anomaly, we would tend to rely...

We also place quite a bit of importance on the principle of dose response relationships and; that is, that if it is truly an effect referable to the treatment, one might expect that as one increases the dose the frequency of the event would also increase.

So that both of those considerations are taken in in determining what effects we would assign to treatment and which effects we would assign to random checks.

MR. MARTEL: Is it not difficult then to determine, where you don't have large groups of people exposed, to determine if in fact a cause of the carcinogen is from the chemical possibly and not what is anticipated in the general public?

Isn't that one of the big arguments that always comes up, that in fact in small groupings, the small operations, small plants, that the difficulty becomes that there aren't enough workers there to trigger what is normally anticipated in the general public?

DR. RITTER: I'm not sure --

MR. MARTEL: In other words, if you get a

large operation and you have a lot of people that get cancer, it is easy to some degree to say: Well, it's attributable to some process or some substance, but when you are dealing with small groups of people that in fact it becomes very difficult to say with any type of certainty: Aha, it is as a result of that because that's what's anticipated or roughly anticipated in the general public?

DR. RITTER: Well, actually it is the converse that is more true. If one is dealing with a relatively large population, the situation as much as you have described, but if one is dealing with a relatively small industrially exposed population such as was the case, for example, some years ago with vinyl chloride in which there was substantial industrial exposure which took place some years ago, if one sees the expression of a relatively rare event in a very small population, that doesn't diminish your confidence that it is relateable to treatment, quite the contrary; it strengthens your belief that it is referable to treatment, because if you are seeing the expression of a rare event in a small population, the likelihood that that is due to random chance is pretty remote.

If we are dealing with a tumor which has a background rate -- let's talk about angiosarcoma for

a moment, which is a rare tumor of the liver which occurs after exposure to vinyl chloride both in rodents and in man. Now, if we were to say that the background incidence, the spontaneous rate of occurrence of that tumor - and I don't recall exactly what it is, but I will pick a number which is probably reasonably representative - if it were 1 in 3- or 400,000, what that really means is that in a population of only 5,000 workers it is extremely unlikely that that tumor would ever be seen.

Now, if in that industrial plant in the case of 5,000 workers you suddenly see 10, that doesn't diminish the belief that it was relateable to the chemical, it is the other way around; it strengthens the belief that it was relateable to the chemical.

MR. MARTEL: But in an industrial plant, you would agree, that if you had 10 people with cancer that you have got an outbreak?

DR. RITTER: That's right.

MR. MARTEL: I am talking about small operations where there is 25 employees or 30 employees and you only have one and the difficulty of trying to establish a link between something -- knowing that there is, what, 350 maybe known carcinogens in the workplace, the difficulty of establishing a link to

that one individual's cancer and some chemical or product in the workplace becomes very difficult because at the same time there is an anticipated level in the general public of that type of cancer anyway.

DR. RITTER: That's only partly correct. If the general level anticipated is 1 in 100,000, for example, and one sees an incidence of 1 in 25, it would certainly make us curious as to whether or not that reflected the normal background rate that we would expect or some aberrant rate.

But I will tell you the real difficulty in the situation that you described is not sorting out the spontaneous rate from the induced rate, but rather sorting out the exposure.

In most operations it's very, very, very difficult to assign any effect to any given chemical because in most human situations we are exposed to a multitude of chemicals over a long period of time, and at the end of the day to assign any particular effect to any particular chemical is very difficult unless the effect is sufficiently uncommon that it is unlikely that it could be referred to anything except a specific exposure.

And the example I gave you was one, angiosarcoma, hepatic angiosarcoma and vinyl chloride

is virtually a fingerprint. Where one sees hepatic angiosarcoma it is almost most certainly referable to exposure to vinyl chloride. The other would be pulmonary mesothelioma which is seen on exposure to asbestos.

MR. MARTEL: Oh, wait a minute. I don't want to get into an argument, but that is one of the most difficult ones to prove when you go to the Compensation Board, that in fact it is related to the exposure to asbestos.

DR. RITTER: I think you are referring to the difficulty in proving that it is related to an industrial exposure to asbestos.

MR. MARTEL: Right.

DR. RITTER: No, that's not what I said. I said that where you see mesothelioma.

MR. MARTEL: Yes.

DR. RITTER: You can say with some degree of certainty that exposure to asbestos has taken place. I didn't say you could say it took place in the workplace.

MR. MARTEL: Oh I understand that, but having gone through the exercise many, many times...

DR. RITTER: It's like main stem bronchis lung tumors and smoking. There are many, many kinds of

lung tumors that are diagnosed routinely, but there is really only one kind of lung tumor that is most frequently found in association with smoking.

So that when one diagnoses this tumor one can say with a reasonable degree of certainty that there has been a prolonged period of smoking in that individual's history. You can't say it is absolutely, but you can certainly say it biologically with a fair degree of confidence. These are fingerprinting types of tumors.

The same is true for many chemicals. We know that certain groups of chemicals are capable of inducing certain birth defects and other groups of chemicals are responsible for inducing another set of -- another kind of birth defects. So that when one sees a specific kind of birth defect one can speculate with some certainty that exposure to this type of chemical in all likelihood has taken place. In fact, one can even say something about when during pregnancy the exposure probably took place.

MS. MURPHY: Well, I certainly don't have any more questions. May I suggest we come back early tomorrow morning, Mr. Chairman.

THE CHAIRMAN: Okay, we will adjourn until 9:00 a.m.

Thank you.

MR. CASTRILLI: Mr. Chairman, could I just get an indication from Ms. Murphy how long she will be in-chief with Mr. Kingsbury?

MS. MURPHY: Well, I can tell you that Mr. Kingsbury speaks a little slower than Dr. Ritter, but we could be -- well, we won't be any longer than the morning. I think I can assure you of that.

MS. CRONK: I should say, Mr. Chairman, if this is of any assistance to Mr. Castrilli, that depending upon when Ms. Murphy completes her examination-in-chief of Mr. Kingsbury I may ask the Board for some time to consider that direct examination in the hopes that I hear part of it today, but depending on when that is, obviously I don't want to inconvenience the Board.

THE CHAIRMAN: Very well. But in all likelihood we should be able to finish with your cross-examination tomorrow, I would think.

MS. CRONK: I would hope so, sir, but of course I can't guarantee it.

MR. CASTRILLI: So I can assume that I will probably not start before late tomorrow?

THE CHAIRMAN: It looks unlikely. Thank you.

---Whereupon the hearing adjourned at 5:10 p.m., to be reconvened on Wednesday, August 9th, 1989, commencing at 9:00 a.m.

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